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Separation of Technetium
from Nuclear Waste Stream Simulants

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A Report by

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ABSTRACT

Members of the Strauss research group at Colorado State University...

STATEMENT OF WORK

(from December 1994)

Separation of Technetium from Nuclear Waste Stream Simulants

We will study liquid anion exchangers such as Aliquat-336 nitrate, various pyridinium nitrates, and related salts so that they may be applied toward a specific process for *extracting* (partitioning) and *recovering* $^{99}\text{TcO}_4^-$ from nuclear waste streams. Many of the waste streams are caustic and contain a variety of other ions. For this reason, we will study waste stream *simulants* that are caustic and contain appropriate concentrations of selected, relevant ions. Neutral and acidic analogues of these simulants may also need to be studied. Methods of measuring the performance of the exchangers and extractant systems will include contact experiments. Batch contact experiments will be used to determine the forward and reverse extraction parameters as a function of temperature, contact time, phase ratio, concentration, solvent (diluent), and other physical properties. They will also be used for stability and competition studies. We will also begin to investigate the use of ion exchange columns based on electroactive polymers.

Specifically, we will investigate the solvent extraction behavior of salts of perrhenate (ReO_4^-), a stable (non-radioactive) chemical surrogate for $^{99}\text{TcO}_4^-$. These two tetrahedral anions have very similar sizes, redox potentials, basicities, and solubilities (see Figure 1, below). Furthermore, in work completed under subcontract 669HH0013-9Z, we demonstrated that distribution ratios K_d were similar for pertechnetate and perrhenate extractions under a variety of conditions (see Table I, below). Therefore, all work performed under the new subcontract will use nonradioactive ReO_4^- in place of $^{99}\text{TcO}_4^-$. The results for perrhenate will then be immediately transferable to a process for the *extraction* of pertechnetate. As far as the *recovery* of pertechnetate is concerned, the difference in redox potentials will necessitate further experimentation once an optimal redox-based recovery system is developed for rhenium. However, since rhenium is more difficult to reduce than technetium, a redox-based system that works for rhenium should also work as well, if not better, for technetium. The investigation of ion exchange columns based on electroactive polymers will also make use of ReO_4^- in place of $^{99}\text{TcO}_4^-$.

As our work progresses, known co-contaminants will be added to the aqueous phase in an effort to simulate closely the composition of known waste streams. The exact nature of these results cannot be anticipated. The CSU investigators will be in weekly communication with Dr. Norman Schroeder, the Technical Representative at LANL. In this way, the CSU investigators will learn about the evolving needs of the Hanford Tank Waste Remediation System project, and

Figure 1. Selected physical properties of pertechnetate and perrhenate ions

Table I. Comparison of TcO_4^- and ReO_4^- Extractions from Aqueous Waste Stream Simulants^a

aqueous phase	organic solvent	anion extractant	$K_d(\text{TcO}_4^-)$	$K_d(\text{ReO}_4^-)$
1 M HNO_3	DIPB	0.2 M Aliquat-336+ NO_3^-	41 ^b	28 ^b
1 M HNO_3	2-NON	0.2 M Aliquat-336+ NO_3^-	1.4×10^2	56
1 M HNO_3	3-NON	0.2 M Aliquat-336+ NO_3^-	1.4×10^2	52
8 M HNO_3	DIPB	0.2 M Aliquat-336+ NO_3^-	0.40 ^b	0.61 ^{b,c}
1 M NaOH	DIPB	0.2 M Aliquat-336+ NO_3^-	5.0×10^2	3.0×10^3
5 M NaOH	DIPB	0.2 M Aliquat-336+ NO_3^-	6.9×10^2	6.1×10^3
1 M $\text{NaOH}/1.5 \text{ M NaNO}_3$	DIPB	0.2 M Aliquat-336+ NO_3^-	1.1×10^2	87
1 M $\text{NaOH}/1.5 \text{ M NaNO}_3$	DIPB	0.2 M Aliquat-336+ NO_3^-	59 ^b	29 ^b
1 M $\text{NaOH}/1.5 \text{ M NaNO}_3$	2-NON	0.2 M Aliquat-336+ NO_3^-	3.4×10^2	1.6×10^2
1 M $\text{NaOH}/1.5 \text{ M NaNO}_3$	3-NON	0.2 M Aliquat-336+ NO_3^-	4.1×10^2	1.8×10^2

^a Abbreviations: DIPB = diisopropylbenzene; 2-NON = 2-nonanone; 3-NON = 3-nonanone; Aliquat-336+ = methyltricaprylammonium cation. ^b 7.0% w/w 1-octanol was added to the organic phase to avoid third layer formation. ^c The nitric acid concentration for this experiment was 7.6 M instead of 8 M.

therefore the lines of experimentation at Colorado State will drift in the direction of LANL and DOE programmatic needs.

We have previously determined that inductively coupled plasma atomic emission spectroscopy (ICP-AES) is the method of choice for measuring submillimolar concentrations of ReO_4^- in aqueous solution. We will continue to use ICP-AES to determine ReO_4^- concentrations before and after a particular extraction experiment. The final aqueous concentration, $[\text{ReO}_4^-]_f$, will be used to calculate the distribution ratio, $D(\text{ReO}_4^-)$, as follows:

$$D(\text{ReO}_4^-) = ([\text{ReO}_4^-]_i - [\text{ReO}_4^-]_f) / [\text{ReO}_4^-]_f$$

Our work will be broken down into the following four distinct subtasks, all of which will proceed contemporaneously. Subtask 1. We will continue our study of alternate organic solvents (i.e., diluents for the ReO_4^- extraction salts). The emphasis will be on solvents that are not aromatic nor chlorinated nor water soluble and that have flash points greater than 60°C . Some degree of polarity is desirable so that concentrations of ReO_4^- extraction salts up to 0.2 M can be used. Promising new solvents include 2-nonanone, 3-nonanone, and several other ketones. We will also explore the possibility of using dialkylsulfoxides, dialkylsulfones, and cyclic alkylene carbonates that have extremely low water solubility. Our goal will be to improve the current extraction system involving Aliquat-336 and *meta*-diisopropylbenzene by at least a factor of 2 in $D(\text{ReO}_4^-)$ without sacrificing selectivity for ReO_4^- and without creating a new waste stream that is environmentally problematic. Variables will include but will not be limited to temperature, contact time, pH, $[\text{NO}_3^-]$, $[\text{NO}_2^-]$, and $[\text{HCO}_3^-]$. The solubilities of any promising organic solvents in the various relevant aqueous phases will be determined. The long term stability of any promising organic solvents to the caustic aqueous phase will be determined. The measurement of $D(\text{ReO}_4^-)$ as a function of the number of batch contacts will be determined.

Subtask 2. We will continue to develop the chemistry of alternate anion extraction salts that will be more effective (i.e., will give a higher K_d) than Aliquat-336 nitrate. One of the most promising new lines of investigation will involve alkyl pyridinium nitrates. Many such salts with short alkyl chains on the pyridine nucleus are too water soluble for this work. However, 1-methyl-3,5-didodecylpyridinium nitrate (MDDPN, the cation is shown below) exhibits no detec-

table water solubility. We will measure $D(\text{ReO}_4^-)$ using this salt for a variety of aqueous waste stream simulants and for a variety of alternate solvents. We will determine the long term stability of this cation toward demethylation of this salt in contact with strongly caustic aqueous phases. If demethylation is problematic, we will synthesize derivatives of MDDPN containing alkyl groups bulkier than methyl (for example, trimethylsilylmethyl).

As another part of this subtask, we will begin to develop possible anion extractant salts based on transition metal complexes that have two adjacent stable oxidation states (neutral and cationic). Both oxidation states of any promising complex must be soluble in suitable organic solvents (diluent) and virtually insoluble in aqueous phases. Both oxidation states of any promising complex must be stable in solutions that are in contact with caustic and acidic aqueous phases. Examples of possible complexes are substituted ferrocenes and various metalloporphyrins. One specific example of a metal complex that will be the target of our initial synthetic efforts is 1,1'-bis(hexadecyl)ferrocene, shown below. This complex will be dissolved in

suitable solvents (see subtask 1). The organic phases will be treated with aqueous solutions of oxidants such as $\text{K}_2\text{Cr}_2\text{O}_7/\text{KNO}_3$ or $\text{Ce}(\text{NH}_4)_2(\text{NO}_3)_6$. This will generate the nitrate salt of the ferricenium ion in the organic phase. Although unsubstituted $[\text{Fe}(\text{Cp})_2]^+\text{NO}_3^-$ is soluble in water, the greasy hexadecyl chains should render our $[\text{Fe}(\text{Cp}')_2]^+\text{NO}_3^-$ salt hydrophobic. Subsequent treatment of the organic phases with aqueous waste stream simulants will allow K_d values to be determined. Other metal complexes will be studied as time permits. The virtue of this type of electroactive extractant is that it may facilitate recovery of rhenium (see subtask 4, below).

Subtask 3. We will begin an investigation into the use of electroactive polymers on solid supports as possible anion exchange resins. Some possibilities include poly-N-methylaniline and poly-N-methylpyrrole, which we will electropolymerize from N-methylaniline or N-methylpyrrole onto conducting carbon beads, forming the resin. The structure of poly-N-methylaniline is shown below. When electrochemically oxidized in the presence of a nitrate-rich solution, the polycationic

form of the polymer is formed, with nitrate ions strongly ion-paired to the polymer. We anticipate that when this polycationic resin is treated with waste stream simulants containing ReO_4^- , perhenate will exchange with nitrate. We will measure $D(\text{ReO}_4^-)$ values for a number of different resins and a number of different aqueous phases. The capacity and stability of the resins over time will also be determined. The virtues of this type of extractant is that it avoids entirely the use of organic solvents and it may facilitate recovery of rhenium (see subtask 4, below).

Subtask 4. We will begin to explore various means to recover (re-extract) rhenium from the organic phases (subtasks 1 and 2) and from the electroactive polymer resins (subtask 3). With extractants that are not electrochemically active, such as MDDPN, recovery may occur when the organic phase containing ReO_4^- is contacted with an aqueous phase containing a reducing agent (for example, Sn^{2+}) and a complexing agent (for example, ethylenediamine or β -diketonates). The rhenium atoms will be reduced from oxidation state VII to oxidation state III or IV, producing cationic complexes such as $[\text{Re}(\text{en})_3]^{3+}$ or $[\text{Re}(\beta\text{-dik})_3]^+$ that will be more soluble in aqueous solution than in the organic solvents. We will determine K_d values for a variety of re-extraction procedures, focusing on those that allow for the largest recovery and for recycle and reuse of the extractants and solvents.

With extractants that are electrochemically active, such as $[\text{Fe}(\text{Cp})_2]^+\text{NO}_3^-$, recovery may occur when the organic phase containing $[\text{Fe}(\text{Cp})_2]^+\text{ReO}_4^-$ is treated with an aqueous phase containing a mild reducing agent. The reduction of $[\text{Fe}(\text{Cp})_2]^+$ will cause the nearly complete transfer of ReO_4^- from the organic phase to the aqueous phase. As above, we will determine K_d values for a variety of possible procedures. Note that no complexants are necessary, and that the recovered form of rhenium will be ReO_4^- .

With the electroactive polymer resins, recovery may occur when the polycationic form of the resin, containing strongly ion-paired ReO_4^- , is electrically reduced. The formation of the neutral form of the resin will cause the nearly complete transfer of ReO_4^- from the resin to the

aqueous rinse. As above, we will determine K_d values for a variety of possible procedures. Note that in this case too the recovered form of rhenium will be ReO_4^- .

SUMMARY OF PROPOSED WORK

(from December 1994)

The four subtasks described above constitute an ambitious research program. It is anticipated that some of the activities will not be able to be explored as completely as others. As the project proceeds, and as the CSU investigators communicate with Dr. Schroeder, some of the proposed experiments might lose their urgency. Nevertheless, the identification, evaluation, and development of alternative solvent extraction methodologies for ReO_4^- will remain the primary objective.

Subtask	Description	Experiments	Duration
1	Extraction of rhenium: alternate organic solvents	<ul style="list-style-type: none">• Aqueous solubility• K_d measurements (ICP-AES)• Stability (NMR, GC-MS)	2/95-9/95
2	Extraction of rhenium: alternate extractant salts	<ul style="list-style-type: none">• Synthesis• Aqueous solubility• K_d measurements (ICP-AES)• Stability (NMR, GC-MS)	2/95-9/95
3	Extraction of rhenium: electroactive polymers	<ul style="list-style-type: none">• Synthesis• Stability (coulometry)• K_d measurements (ICP-AES)	2/95-9/95
4	Recovery of rhenium:	K_d measurements (ICP-AES): <ul style="list-style-type: none">• reduction-complexation of rhenium• reduction of cationic extractant• reduction of polycationic electroactive polymer	2/95-9/95

Section I — Extraction of ReO_4^- : Alternate Organic Solvents

We have determined $D(\text{ReO}_4^-)$ values for a number of new solvents, using 0.2 M Aliquat-336 nitrate as the extractant and 1 M NaOH/1.5 M NaNO_3 /10 mM KReO_4 as the aqueous phase. We realize that most of the new solvents cannot be used on the scale necessary at Hanford for safety and environmental reasons. Nevertheless, we need this data to be able to design/discover the ideal solvent. The new data are (solvent ($D(\text{ReO}_4^-)$): dichloromethane (40.3); 1-octanol (4.0); toluene (61.5); 2-ethyl-1-hexanol (5.1 Note: this confirms our earlier value of 5.1 for this solvent); nitroethane (44.8); nitrobenzene (131.5); chlorobenzene (103.5). For comparison, our $D(\text{ReO}_4^-)$ values under identical conditions for *m*-diisopropylbenzene, 2-nonanone, and 3-nonanone were 87, 160, and 180, respectively.

We also investigated whether 1-octanol could give a $D(\text{ReO}_4^-) > 100$ if enough Aliquat-336 nitrate was used. The conditions were the same as those in the previous paragraph, except that 0.5 M, 1.0 M, and 1.5 M Aliquat-336 nitrate were used. The three $D(\text{ReO}_4^-)$ values were 14.3, 56.0, and 168, respectively.

Section II — Extraction of ReO_4^- and TcO_4^- : Alternate Extractant Salts

Metalloporphyrins. We have investigated a new idea for the extraction/recovery of pertechnetate from *acid waste*. We treated a 1 mM solution of KReO_4 in 1 M HNO_3 with an equal volume of the μ -oxo complex of iron(III) tetraphenylporphyrin. The porphyrin complex was present in very small amount due to a low solubility. The nominal solubility was 5 mM in Fe(III) , but the actual solubility was less than that since undissolved porphyrin complex was clearly present. The measured $D(\text{ReO}_4^-)$ (exp. done in triplicate) was 0.429. This was very promising. More soluble porphyrin complexes are known, and we are in the process of obtaining some for preliminary work. The recovery step should be as simple as treated the organic phase with 0.1 M aqueous base. The chemistry is based on the following equations:

Note that one-third of the perrhenate has been extracted by the metal complex even in the presence of 1000-fold excess nitrate ion. This certainly warrants further study. We realize that this particular process would only work for removing pertechnetate from acid waste, but it is a start and shows that coordination chemistry may be able to play an important role in the remediation of the Hanford waste.

We prepared a >25 g batch of a new porphyrin, tetrakis(*p*-isopropylphenyl)porphyrin ($\text{H}_2(\text{T-}p\text{-Pr}^i\text{-PP})$). It was characterized by UV-VIS and NMR spectroscopy. It is much more soluble in organic solvents than simple tetraphenylporphyrin, an important property as far as its potential use as an extractant is concerned. We have prepared a 5 g batch of the metallated compound $\text{Fe}(\text{T-}p\text{-Pr}^i\text{-PP})\text{Cl}$, and prepared the μ -oxo complex. This extractant will work as follows:

Unfortunately, none of the porphyrins we studied were sufficiently soluble in organic solvents to give $D(\text{ReO}_4^-)$ values greater than 100. This line of investigation was eventually abandoned. However, we will continue to think of other possible pH-active extractants.

Ferrocenes. We have investigated a new idea for the extraction/recovery of pertechnetate from a variety of waste streams. We have discovered that decamethylferrocene (FeCp^*_2) dissolved in dichloromethane can be oxidized with an aqueous layer of $\text{Ce}(\text{NH}_4)_2(\text{NO}_3)_6$ without a substantial amount of the substituted ferrocene being transferred to the aqueous layer (we add anywhere from 0.1 M to 4.0 M KNO_3 to the aqueous layer):

Furthermore, we have found that nitrite ion *will not* reduce the ferrocenium salt:

This suggested that the substituted ferrocene, once oxidized, could be used to separate perrhenate and pertechnetate from nuclear waste simulants according to the following scheme:

We prepared ~0.2 M solutions of decamethylferrocenium nitrate in dichloromethane according to the above reaction. We treated aliquots of this solution with an equal volume of an aqueous solution containing 1 mM KReO_4 , 1 M NaOH , and 1.5 M NaNO_3 (Solution B). The measured $D(\text{ReO}_4^-)$ was 43(1) (compare $D(\text{ReO}_4^-)$ for Aliquat-336 nitrate in dichloromethane, which is 49(1)). *This is a very significant result.* It demonstrates that we can use a redox-active extractant (i.e., a substituted ferrocene, operating between the Fe(II)/Fe(III) oxidation states) for the removal of perrhenate, and by analogy, pertechnetate, from nuclear waste stream simulants. Although $D(\text{ReO}_4^-)$ is less than 100, there is reason to believe that $D(\text{ReO}_4^-)$ will be greater than 100 for other, more suitable, solvents such as 2- and 3-nonanone.

We completed the synthesis of several grams of 1-tri-*n*-hexylsilylferrocene, $\text{Fe}(\text{Cp})(\text{C}_5\text{H}_4\text{Si}(\text{C}_6\text{H}_{11})_3)$, from the reaction:

This compound will be much less expensive to obtain than decamethylferrocene. We have determined that the corresponding ferrocenium nitrate salt is not very soluble in water. Therefore, once larger batches of this compound have been prepared and purified, we will study its ability to act as a redox-active extractant for $\text{ReO}_4^-/\text{TcO}_4^-$.

Details of the new process are as follows:

step 2 Separate the two phases

step 4 Separate the two phases

Notes — In the above scheme, Cp' represents the $\eta^5\text{-C}_5\text{R}_5$ ligand, where any or all of the R groups may be H, Me, Et, or other substituents; for the time being, $\text{ox} = [\text{Ce}^{4+} + 2\text{NH}_4^+]$ and $\text{red} = [\text{Ce}^{3+} + 2\text{NH}_4^+]$.

Details — Step 1. For the time being, $\text{ox} = [\text{Ce}^{4+} + 2\text{NH}_4^+]$ and $\text{red} = [\text{Ce}^{3+} + 2\text{NH}_4^+]$. One important issue is the distribution of the ferrocenium compound $[\text{Fe}(\text{Cp}')_2][\text{NO}_3]$ in the two phases. Unsubstituted ferrocene, $\text{Fe}(\text{Cp})_2 = \text{Fe}(\eta^5\text{-C}_5\text{H}_5)_2$, which is orange in color, was soluble in many organic solvents and did not partition into water when the organic phase was shaken with an equal volume of water. However, when a dichloromethane solution of it was oxidized by ceric ammonium nitrate, $\text{Ce}(\text{NH}_4)_2(\text{NO}_3)_6$, nearly all of the blue $[\text{Fe}(\text{Cp})_2][\text{NO}_3]$ that formed was partitioned into the water layer. Substitution of the two Cp ligands by a single methyl or *n*-butyl group did not solve the problem. When decamethylferrocene, $\text{Fe}(\text{Cp}^*)_2 = \text{Fe}(\eta^5\text{-C}_5\text{Me}_5)_2$, was used, the organic phase became blue-green due to the formation of $[\text{Fe}(\text{Cp}^*)_2][\text{NO}_3]$ and only a very small amount of blue-green color developed in the water layer. When 1-trihexylsilyl-

ferrocene, $\text{Fe}(\text{Cp})(\text{Cp}^{\prime\prime}) = \text{Fe}(\text{Cp})(\text{C}_5\text{H}_4(\text{Si}(\text{C}_6\text{H}_{13})_3))$, was used, all of the blue-green color stayed in the dichloromethane layer. Therefore, both $\text{Fe}(\text{Cp}^*)_2$ and $\text{Fe}(\text{Cp})(\text{Cp}^{\prime\prime})$ are suitable as far as step 1 is concerned if dichloromethane is used. Other solvents, including 1,3-diisopropylbenzene, chlorobenzene, and *o*-dichlorobenzene, are not suitable with $\text{Fe}(\text{Cp}^*)_2$ because the corresponding ferrocenium salt partitioned to a much greater extent into the water layer. This is not a problem for $\text{Fe}(\text{Cp})(\text{Cp}^{\prime\prime})$, however: its ferrocenium salt remained largely in the organic layer when the solvent was dichloromethane, 1,2-dichloroethane, toluene, nitrobenzene, nitroethane, 2- and 3-nonanone, 2-ethyl-1-hexanol, and 1-octanol. One final issue is overoxidation. When excess Ce^{4+} was used with $\text{Fe}(\text{Cp}^*)_2$, the methyl groups on the Cp^* ligands were irreversibly oxidized, and the resulting organic phase did not extract ReO_4^- . Overoxidation was not a problem with $\text{Fe}(\text{Cp})_2$ or $\text{Fe}(\text{Cp})(\text{Cp}^{\prime\prime})$, because these compounds lack an easily oxidizable alkyl group α to the rings.

Step 3. Experiment 1

Aqueous phase: 10.0 mM KReO_4 , 1.00 M NaOH , 1.50 M NaNO_3 (Solution B)

Organic phase: 0.200 M $[\text{FeCp}^*_2][\text{NO}_3]$ in dichloromethane

$D(\text{ReO}_4^-) = 63.3(1)$

Experiment 2

Aqueous phase: 10.0 mM KReO_4 , 1.00 M NaOH , 1.50 M NaNO_3

Organic phase: 0.200 M $[\text{Aliquat-336}][\text{NO}_3]$ in dichloromethane

$D(\text{ReO}_4^-) = 49(1)$

Experiment 3

Aqueous phase: 10.0 mM KReO_4 , 1.00 M NaOH , 1.50 M NaNO_3

Organic phase: 0.200 M $[\text{Fe}(\text{Cp})(\text{Cp}^{\prime\prime})][\text{NO}_3]$ in dichloromethane

$D(\text{ReO}_4^-)$ was not measured because the blue-green color changed to orange, indicating that Solution B reduces this particular ferrocenium derivative

Conclusion: The standard potential of the $\text{Fe}(\text{Cp}^*)_2/[\text{Fe}(\text{Cp}^*)_2]^+$ couple is a very important parameter. If the $[\text{Fe}(\text{Cp}^*)_2]^+$ ion is too easily reduced, then the following reaction may occur:

In a separate experiment, we also found that unsubstituted $[\text{Fe}(\text{Cp})_2]^+$ was also reduced by Solution B.

In ongoing work, we will explore other substituted ferrocene derivatives that will (i) be relatively inexpensive to prepare, (ii) be soluble in a variety of organic solvents in the reduced and oxidized forms, (iii) have standard potentials such that the oxidized form will not be reduced by solution B.

Professor Strauss spent several weeks during July and August 1995 at LANL. During this time, he measured $D(\text{TcO}_4^-)$ using $\text{Fe}(\text{Cp}^*)_2\text{NO}_3^-$. These values were measured for six different simulants:

Simulant	$D(\text{TcO}_4^-)$
Soln. B	228
DSSF	153
DSSF 1:1.4	174
DSSF 1:2.0	202
DSSF 1:3.0	312
Paducah ground water	1,175

In an effort to obtain a ferrocene derivative with a suitable potential for use with alkaline waste streams and that is more lipophilic than $\text{Fe}(\text{Cp}^*)_2$, we are in the process of synthesizing this material following a literature synthesis for 1,3-diisopropylcyclopentadiene. We have prepared and purified the diene (a 3-g sample has been obtained), and will have samples of the ferrocene derivative within one week. Its lipophilicity and its perhenate (solvent) extraction efficacy will then be examined.

The class of ferrocene derivatives FcNR_2 (R = a long chain, possibly branched, alkyl group) should also be more lipophilic than $\text{Fe}(\text{Cp}^*)_2$ and, by analogy with FcNMe_2 , will have a suitable potential for use with alkaline waste streams. The synthesis of this class of derivatives

starts with FcBr , which is not commercially available. We are in the process of preparing and purifying a large batch of FcBr for the synthetic work to come. Once FcNR_2 derivatives have been prepared, their lipophilicity and perchlorate (solvent) extraction efficacy will be examined.

The ferrocene derivative FcNHMe is an intermediate in the proposed synthesis of $\text{FcN(Me)(C}_2\text{H}_4\text{Cl)}$, the compound that our group will deliver to Tom Robison at LANL for incorporation into water soluble polymers. Once we have prepared a sufficient quantity of FcBr , we will prepare FcNHMe and $\text{FcN(Me)(C}_2\text{H}_4\text{Cl)}$, and we will then send a sample of $\text{FcN(Me)(C}_2\text{H}_4\text{Cl)}$ to Tom.

N-cetylpyridinium nitrate, $[\text{C}_5\text{H}_5\text{NC}_{16}\text{H}_{33}][\text{NO}_3]$. In our continuing search for lipophilic pyridinium salts, we prepared and purified this compound and discovered that its solubility in water is negligible. This salt is significantly different than those we examined earlier, since the lipophilic functionalities in the earlier studies were substituents at the 2-, 3-, 4-, 5-, or 6-positions, not at the 1-position. With the exception of 3,5-didodecylpyridinium nitrate (which we prepared from a small, 1-g batch of the iodide salt provided by Prof. Richard Bartsch), none of those salts were sufficiently lipophilic to allow meaningful $D(\text{ReO}_4^-)$ values to be determined. The availability of large quantities of a truly lipophilic pyridinium salt has now allowed us to make a head-to-head comparison of a pyridinium nitrate salt with Aliquat-336 nitrate (AQN). In addition to the potential for finding a better extractant than Aliquat-336 nitrate, this comparison may lead to a greater understanding of the greater $K_d(\text{TcO}_4^-)$ value for Reillex vs. Dowex ion-exchange resins.

The data are as follows (N-cetylpyridinium nitrate = NCPN):

aqueous phase, $[\text{ReO}_4^-] = 10 \text{ mM}$	organic phase, 50 mM extractant in dichloromethane	$D(\text{ReO}_4^-)$
pH = 7 water	NCPN	1.3×10^2
	AQN	3.7×10^2
1 M HNO_3	NCPN	7.9
	AQN	7.6
1 M NaOH ,	NCPN	6.9
1.5 M NaNO_3	NCPN	not measured
	AQN	9.5

Section III — Extraction of ReO_4^- : Electroactive Polymers

The concept we are pursuing here is the preparation of redox-active ion-exchange columns, so that the recovery of TcO_4^- will be as easy as changing a potential across two electrodes. We have succeeded in preparing thin films of poly-NMP on small glassy carbon electrodes. The structure of poly-NMP is shown below:

Growing the films by a potential-step procedure has allowed us to measure the total charge passed and therefore allows us to form films with a constant, reproducible electrochemical (echem) response.

Refer to the figure below. In this experiment, the echem response of the poly-NMP electrode in 0.1 M aqueous NaNO_3 changes dramatically upon addition of successive amounts of aqueous KReO_4 . In fact, the change is more than 90% complete after the first addition of KReO_4 , at which point the concentration of ReO_4^- was 0.002 M. This information can be used to calculate an equilibrium constant, K , based on the following chemical reaction:

$$K = \frac{[\text{ReO}_4^-(\text{polym})][\text{NO}_3^-(\text{aq})]}{[\text{ReO}_4^-(\text{aq})][\text{NO}_3^-(\text{polym})]}$$

Since the concentration ratio $[\text{ReO}_4^-(\text{polym})]/[\text{NO}_3^-(\text{polym})]$ has been estimated to be ~ 9 and $[\text{NO}_3^-(\text{aq})]$ and $[\text{ReO}_4^-(\text{aq})]$ are 0.1 M and 0.002 M, respectively, $K = 450$.

When a poly-NMP electrode with a normal, characteristic echem response in aqueous NaClO₄ was immersed in 0.1 M NaOH and the potential cycled over the standard range (0.5 V to -0.4 V), there was virtually no passage of current due to reversible oxidation/reduction of the poly-NMP electrode. When the electrode was reimmersed in NaClO₄, the original echem response was not restored. Instead, the echem response was the same as the response in 0.1 M NaOH. Our conclusion is that the poly-NMP film has been irreversibly altered so that its conductivity is very low and therefore its capacity to remove ions such as ClO₄⁻, ReO₄⁻, or TcO₄⁻ has been greatly diminished.

The echem response of the electrode in 0.1 M NaOH is very similar to that in a mixture of 1.0 M NaOH and 1.5 M NaNO₃ (Solution B). This rules out the possibility that hydroxide only attacks the polymer film at a high positive potential. In other words, either hydroxide attacks the film in the absence of a potential sweep or hydroxide attacks the film rapidly at all potentials along

the potential sweep. Experiments are in progress to determine which of these two conclusions is correct.

The echem responses of the poly-NMP electrode are qualitatively the same in 0.1 M HNO_3 and 0.1 M NaNO_3 . Furthermore, the long term stability of the electrode through many potential-sweep cycles may be better at the lower pH. Therefore, while this particular electroactive material may not be suitable for the extraction/recovery of TcO_4^- from alkaline waste streams, it may be possible to design a redox-active ion-exchange column for use with neutral or acidic waste streams.

We are planning to examine other electroactive polymers, including poly-N-methylaniline, with the goal of preparing a polymer film that is stable in the presence of alkaline waste streams.

Section IV — Recovery of ReO_4^- and TcO_4^-

We are planning a series of experiments that will have as their aim the recovery of rhenium from organic phases of $[\text{Aliquat-336}]^+[\text{ReO}_4]^-$. We will be using a number of reducing agents, including but not limited to Sn^{2+} and $\text{S}_2\text{O}_4^{2-}$, and a number of complexing agents, including but not limited to ethylenediamine, to re-extract rhenium (and ultimately technetium) out of the organic phase and into an innocuous aqueous phase. These experiments will be started within two weeks.

We have done some preliminary experiments with back-extractions from DIPB containing 0.2 M Aliquat-336 nitrate. We treated the organic solutions, which contained known amounts of ReO_4^- , with three different aqueous solutions: (1) 1 M HNO_3 ; (2) 1 M HNO_3 plus 0.1 M SnCl_2 ; (3) 1 M HNO_3 plus 0.1 M SnCl_2 plus 0.3 M ethylenediamine. In all three cases, the $D(\text{ReO}_4^-)$ values were approximately 90, indicating that very little back-extraction had occurred and that the presence of divalent tin did not improve the back-extraction. These results are consistent with Dawn Van Seggen's experiments last summer using TcO_4^- . Much more remains to be done to find a suitable oxidation/reduction system for the back-extraction of $\text{ReO}_4^-/\text{TcO}_4^-$ from the organic phases. We will continue to work on this.

We are continuing to study back-extractions from DIPB and other solvents containing 0.2 M Aliquat-336 nitrate. The back-extractions will be based on the reduction of ReO_4^- to either an insoluble compound of rhenium or a water-soluble complex of rhenium.

We have also found that dithionite will reduce the ferrocenium salt back to the uncharged ferrocene:

Therefore, we believe that dithionite will be of use in recovering TcO_4^- and ReO_4^- from the organic phase. We are starting to do a series of experiments to prove this hypothesis. We will explore different substituted ferrocenes, such as 1-butylferrocene and 1-*tert*-butylferrocene (already on hand), so that the procedure developed will not have to depend on expensive decamethylferrocene. This line of experimentation will be among our highest priorities during the next month.

We have performed preliminary back-extraction experiments with decamethylferrocene. When a dichloromethane solution of $[\text{FeCp}^*_2]^+[\text{NO}_3]^-$ (which is a bright green color) is treated with pure water and a small amount of metallic zinc, the green color disappears and the original yellow color of FeCp^*_2 is formed. This means that the following reduction has occurred:

Although the conditions of the experiment were less than ideal, more than 96% of the ReO_4^- ion was recovered into a neutral aqueous phase. This is a very significant result, since it now appears that an entire extraction technology can be built around redox-active extractants such as substituted ferrocenes:

- Aqueous phase: unbuffered water plus excess granular metallic zinc
- Organic phase: 0.200 M $[\text{Fe}(\text{Cp})(\text{Cp}^*)][\text{NO}_3]$ in dichloromethane
- Result: the recovery of ReO_4^- into the aqueous phase was ~100%. Evaporation of some dichloromethane made an accurate measurement of $\text{D}(\text{ReO}_4^-)$ problematic.

In several experiments, recovery of technetium using iron metal was studied. For example, treatment of the dichloromethane layer with excess iron metal resulted in a color change of the solution from dark green to light yellow within a few minutes. The light yellow organic solution was nearly free of activity: the (CPM-BKG)/mL in the range of 0.165 to 0.245 MeV was only 22, whereas the dark green organic solution before treatment with iron metal had a (CPM-BKG)/mL reading of 17,291. The CPM-BKG value for the solid phase (iron metal plus any insoluble technetium compounds such as TcO_2 , $\text{Fe}(\text{TcO}_4)_3$, etc.) was 15,990. The difference between 16,012 (15,990 + 22) and 17,291 may be the result of the change in configuration of the samples (i.e., 1 mL homogeneous solution vs. a small amount of powder in the bottom of a counting tube).

The solid phase was treated with 2 mL of ddH₂O. After mixing for several minutes, and allowing the remaining solids to settle, the supernatant was yellow-orange with some cloudiness. The (CPM-BKG)/mL activity of the supernatant was 419, whereas the solid phase changed from 15,990 to 14,972. The total activity in the two phases was the same to within 1% of the original activity in the solid phase before the treatment with water.

The solid phase was next treated with a portion of 30% H₂O₂. Much bubbling was observed, and the supernatant became orange with some cloudiness. The (CPM-BKG)/mL activity of the supernatant was 419, whereas the solid phase changed from 14,972 to 11,573 (the total amount of aqueous hydrogen peroxide solution used was not measured).

In one experiment, the recovery of technetium with iron metal was delayed for approx. 20 hours. The organic phase was dark green: i.e., no color change had occurred during the 20 hour period. However, treatment with iron metal (CSU powder) did not cause a color change to yellow within a few minutes. In fact, after 3.5 hours, the mixture was still dark in color. The solutions did have a yellow cast to them, but they looked significantly different than samples that are treated with iron powder immediately after the extraction step. Several attempts were made to filter the supernatant, but suspended solids were always present. The (CPM-BKG)/mL dropped from ca. 29,000 to between 1,500-2,500, indicating that recovery of technetium had taken place, even though the color of the organic solution had not completely turned light yellow. A tentative explanation is that a side reaction (or reactions) took place, irreversibly transforming the dark green $\text{Fe}(\text{Cp}^*)_2^+$ cation into another dark colored product.

In another experiment, course iron "powder" (Aldrich) was used. After 3.5 hours of shaking, the solution was still dark green and did *not* have a yellow cast to it. The activity did drop from ca. 10,000 CPM/ml to ca. 1,500 CPM/mL, indicating again that an appreciable recovery of technetium was taking place.

After sitting for 48 hours, the dark green "cold" stock solution of $\text{Fe}(\text{Cp}^*)_2^+\text{NO}_3^-$ in dichloromethane that was used to determine the $\text{D}(\text{TcO}_4^-)$ values listed above also would not reduce in the presence of iron powder (either CSU or Aldrich) after 15 minutes of shaking. This supports the tentative hypothesis that side reactions take place when $\text{Fe}(\text{Cp}^*)_2^+\text{NO}_3^-$ solutions in dichloromethane are allowed to stand for 24-48 hours.

2.50-mL samples of Soln. B were treated with 1.0 g Fe powder (CSU) and were shaken for 15 minutes. The samples were filtered through plastic "column" filters and counted. Once again, the filters were not completely efficient, and some finely divided iron powder remained in the 1.00-mL samples that were counted. However, most of the iron powder remained in the shaking tube or on the filter. The activity of the samples before and after treatment with the iron powder were the same (14,926 CPM-BKG before (average of two samples), 14,933 CPM-BKG after (average of two samples)). This is a very important result, because it shows that iron powder will not quickly reduce aqueous TcO_4^- (1.00 M NaOH/1.50 M NaNO_3) to an insoluble form.

There is clearly more to do as far as the reduction/recovery of TcO_4^- and ReO_4^- from dichloromethane solutions of $\text{Fe}(\text{Cp}^*)_2^+(\text{NO}_3^-, \text{TcO}_4^-)$ is concerned.

Section V — Miscellaneous

We have spent a considerable amount of time this year installing and testing a new "high-salt" nebulizer on our ICP-AES spectrometer. This should allow us to measure $D(\text{ReO}_4^-)$ values much more precisely than in the past, especially when we use solutions containing 1.0 M NaOH plus 1.5 M NaNO_3 (17% dissolved solids). We reconfirmed many of the $D(\text{ReO}_4^-)$ values that we gathered during the past year. We are still searching for solutions to an ongoing problem of fluctuating ICP-AES background when analyzing solutions with high Na^+ concentrations.

We discovered that the addition of 0.1% Triton-X 100 to our samples of KReO_4 in 1.0 M NaOH/1.5 M NaNO_3 greatly improved the precision and reproducibility of our measured $D(\text{ReO}_4^-)$ values. This was a major improvement in our analysis protocol.

Professor Strauss spent several weeks during July and August 1995 at LANL. During this time, he finished preparing the manuscript "Solvent Extraction of Pertechnetate and Perrhenate Ions From Nitrate-Rich Acidic and Alkaline Aqueous Solutions" and submitted it to the journal Solvent Extraction and Ion Exchange. He also conferred with Drs. Norman Schroeder and Thomas Robison about the synthesis of water-soluble polymers.

Appendix

Literature Reviews

Fe(Cp)₂ Redox/Extract 6/27/95 page 25

Fe(Cp)₂ Ion Exchange 6/28/95 page 47

Fe(Cp)₂ Water Soluble Polymers 6/29/95 page 52

Aminoferrocene 7/2/95 page 53

Aminoferrocene 7/13/95 page 57

Fe(Cp)₂ Redox/Extract 6/27/95

=> d 1101 1-6 ti,an,so,la,abs

L101 ANSWER 1 OF 6 CA COPYRIGHT 1995 ACS

TI Reduction of diesel-born emissions by combination of fuel additives

and ceramic particulate traps. Part 1: state of development, laboratory tests

AU Hoffmann, U.; Rieckmann, T.; Schaedlich, K.

SO Erdöl, Erdgas, Kohle (***1994***), 110(4), 163-70

CODEN: EEROEY; ISSN: 0179-3187

LA German

L101 ANSWER 2 OF 6 CA COPYRIGHT 1995 ACS

TI Synthesis and complexing properties of bis-crown ethers incorporating benzo-15-crown-5 and metalocene

AU Izumi, Taeko; Ohashi, Satoshi; Tate, Yasuhiro

SO J. Heterocycl. Chem. (***1993***), 30(4), 967-75

CODEN: JHICAD; ISSN: 0022-152X

LA English

L101 ANSWER 3 OF 6 CA COPYRIGHT 1995 ACS

TI ***Extraction*** of cesium and strontium ions from solutions

under their joint presence by sorbents of different nature

AU Strelko, V. V.; Meleshevich, S. I.

SO Ukr. Khim. Zh. (Russ. Ed.) (***1993***), 59(1), 25-9

CODEN: UKZHAU; ISSN: 0041-6045

LA Russian

L101 ANSWER 4 OF 6 CA COPYRIGHT 1995 ACS

TI On-line supercritical fluid ***extraction*** and chromatography

of organotins with packed microbore columns and formic acid modified

carbon dioxide

AU Oudsema, John W.; Poole, Colin F.

SO Fresenius J. Anal. Chem. (***1992***), 344(10-11), 426-34

CODEN: FIACES; ISSN: 0937-0633

LA English

L101 ANSWER 5 OF 6 CA COPYRIGHT 1995 ACS

TI Methods of ***extracting*** iron species from liquid hydrocarbons

IN Hart, Rosalie B.; Roling, Paul V.

SO U.S., 5 pp.

CODEN: USXXAM

LA English

L101 ANSWER 6 OF 6 CA COPYRIGHT 1995 ACS

TI Method and systems for ***extracting*** oxygen-employing

electrocatalysts

IN Kerr, John B.; De Castro, Emory S.; Zenner, Bruce

SO U.S., 15 pp. Cont.-in-part of U.S. Ser. No. 18,888, abandoned.

CODEN: USXXAM

LA English

=> d 1101 1-6 abs

L101 ANSWER 1 OF 6 CA COPYRIGHT 1995 ACS

AB Diesel particulate emissions are decreased by combinations of fuel additives and uncoated or catalytically coated ceramic particulate filters. The self-regeneration of

particulate filters, which are integrated in the exhaust pipe, via catalytic or noncatalytic combustion is investigated.

With the aid of nonisothermal, nonsteady state expts., using filters which are soot loaded, the kinetic parameters and the rate of the combustion of diesel soot are detd. Three

metalloorg. fuel additives, 15 different soot filters, and 11 catalytic coatings are examd. An anal. of the polycyclic

arom. hydrocarbons (PAH), using HPLC, a simulated distn. of the ***extractable*** compds., elementary anal.

of the soot and individual characteristics of the burn-off curves make clear the influence of fuel additives on the amt. and the chem. compn. of diesel particulate emissions.

L101 ANSWER 2 OF 6 CA COPYRIGHT 1995 ACS

GI Diagram(s) available in offline prints and/or printed CA Issue.

AB Bis-crown ethers in which the benzo-15-crown-5 units were linked to 1,1'-positions of metalocene I (M = Fe or Ru, X = bond, CO₂, CONH) with amide, ester, or -C-C-bonds were synthesized. Complexing ability of the compds. with alkali, alkali earth, and transition metal cations were measured by the solvent extn. method. The results showed that the crown ethers, e.g., I, had high affinity toward alkali metal cations (Li⁺, Na⁺, K⁺, and Rb⁺) and heavy-metal cations (Ag⁺ and Tl⁺). The difference of complexing ability for metal cations between ***ferrocene*** and ruthenocene derivs. could not be detected significantly. The extractability of metalocene-bis-crown ethers for metal cations was more larger than that of the corresponding mono-crown ethers, and irregular increments of extractability were explained by assuming the existence of a mixt. of 1:1 and 2:1 complexes.

L101 ANSWER 3 OF 6 CA COPYRIGHT 1995 ACS

AB Efficiency of the extn. of Cs⁺ and Sr²⁺ from Ringer-Lock soln. by sorbents of different nature:

ferrocene carbon sorbent of KCNO grade and modified silico-polymethylsiloxane was studied in comparison. The organo-inorg. sorbents display their affinity to both ions.

L101 ANSWER 4 OF 6 CA COPYRIGHT 1995 ACS

AB Supercrit. fluid chromatog. (SFC) using formic acid modified carbon

dioxide and polymer encapsulated silica based stationary phases is

suitable for the anal. with flame ionization detection of organotin

compds. of general structure R_nSnX_{4-n} where n = 4, 3, or 2. For

ionic organotin compds. the retention time is independent of the

identity of the anion, probably due to the formation of formate

salts at the time of injection. A solventless injector is shown to

be useful for injecting solvent vols. in the range of 0.5-50 .mL

with solvent elimination prior to transferring the sample in the

mobile phase to the column and as a simple in-line collection

interface for SFC with supercrit. fluid extn. (SFE). Various

organotin compds. in a marine paint and spiked into a potato or

almond matrix were detd. on line, by SFE/SFC with flame ionization

detection, with a limit of detn. of about 1 ppm. The detection

limit for typical organotin compds. using the flame ionization

detector is about 0.5 ng in the chromatog. system described. SFC

using formic acid modified carbon dioxide and flame ionization

detection represents a considerable advance in the chromatog. anal.

of ionic organotin compds. which are often time consuming and

problematic to analyze by other methods. This method is also

feasible to analyze other organometallic compds.

L101 ANSWER 5 OF 6 CA COPYRIGHT 1995 ACS

AB Methods of extg. Fe species, such as Fe naphthenates and Fe

sulfides, from a liq. hydrocarbon, such as crude oil, are disclosed.

A chelant selected from oxalic or citric acid is added directly to

the liq. hydrocarbon and mixed therewith. Then, wash water (pH

6-11) is added to form a water-in-oil emulsion. The emulsion is

then resolved, with an Fe-laden aq. phase being sepd.

L101 ANSWER 6 OF 6 CA COPYRIGHT 1995 ACS

AB O is extd. from a fluid mixt. feedstock by circulating a carrier

fluid from an O loading station to an electrochem. cell. The carrier fluid includes a carrier compd. capable of reversibly binding O with O binding dependent on the oxidn. state of the compd. O bound to the carrier compd. in a 1st oxidn. state is released as the oxidn. state is altered at the 1st electrode of the electrochem. cell. The carrier compd. is then returned to the 1st oxidn. state at the 2nd electrode at the electrochem. cell. The loading station typically comprises an O-permeable membrane which prevents bulk mixing of the fluid mixt. and the carrier fluid. By providing an electrocatalyst capable of rapid electron transfer and having an electropotential less than that of the carrier compd., without binding or otherwise interfering with the carrier compd., low energy electron transfer between the carrier compds. and the electrodes of the electrochem. cell is achieved.

=> s ferrocene?

L103 7957 FERROCENE?

=> s l103 and extract? and ion(w)extract?

566996 ION
116732 EXTRACT?

L104 203 ION(W)EXTRACT?
0 L103 AND ION(W)EXTRACT?

=> s l103 and extract?

116732 EXTRACT?

L105 25 L103 AND EXTRACT?

=> s l105 not 1990-1995/py

2852036 1990-1995/PY

L106 19 L105 NOT 1990-1995/PY

=> d l106 1-19 (t,au,so,la

L106 ANSWER 1 OF 19 CA COPYRIGHT 1995 ACS

TI Synthesis and cation-complexing ability of mono and bis(crown ether)s incorporating aza-crown ether and ***ferrocene*** unit
AU Kasahara, Akira; Izumi, Taeko; Sugano, Miwa
SO Kenkyu Hokoku - Asahi Garasu Kogyo Gijutsu Shokai (1989), 55, 257-63
CODEN: AGKGAA; ISSN: 0365-2599 LA English

L106 ANSWER 2 OF 19 CA COPYRIGHT 1995 ACS

TI ***Extraction*** -potentiometric determination of rhenium in heat-resistant alloys
AU Pimenova, V. A.; Balusov, V. A.
SO Sovrem. Metody Kontrolya Struktury i Svoistv Metalloproduktov
Zh. Metallurgii, M. (1988) 33-5
From: Ref. Zh., Metall. 1988, Abstr. No. 6K65 LA Russian

L106 ANSWER 3 OF 19 CA COPYRIGHT 1995 ACS

TI Polyalkylamines complexes for ligand ***extraction*** and generation and polyalkylamine and electrochemical cell for ***extracting*** oxygen from a fluid mixture
IN Zenner, Bruce David; Ciccone, Joseph Paul; De Castro, Emory Sayre; Deardorff, Larrie Alan; Kerr, John Borland; Vinson, Jeffry D.
SO PCT Int. Appl. 109 pp.
CODEN: PDOD2 LA English

L106 ANSWER 4 OF 19 CA COPYRIGHT 1995 ACS

TI Demilitarization of high burn rate propellants containing ***ferrocene*** or its derivatives
IN Mitchell, Porter H.; Melvin, William S.
SO Statutory Invent. Regist., 7 pp.
CODEN: SRXKEV LA English

L106 ANSWER 5 OF 19 CA COPYRIGHT 1995 ACS

TI Preparation and complexing properties of crown ether compounds incorporating a ***ferrocene*** unit at 1,2- or 1,3-positions
AU Izumi, Taeko; Saitou, Katsuo; Matsunaga, Shigeki; Kasahara, Akira
SO Bull. Chem. Soc. Jpn. (1986), 59(8), 2425-8
CODEN: BCSJAS; ISSN: 0009-2673 LA English

L106 ANSWER 6 OF 19 CA COPYRIGHT 1995 ACS

TI Determination of osmium
IN Gorbacheva, I. P.; Volkova, G. V.; Dmitrieva, G. A.
SO U.S.S.R. From: Otkrytiya, Izobret. 1986, (43), 180.
CODEN: URXXAF LA Russian

L106 ANSWER 7 OF 19 CA COPYRIGHT 1995 ACS

TI ***Extraction*** -amperometric determination of silver in sulfide ores
AU Maistrenko, V. N.; Murinov, Yu. I.; Reznik, L. B.; Amirkhanova, F. A.; Nikitin, Yu. E.
SO Zh. Anal. Khim. (1985), 40(2), 272-4
CODEN: ZAKHAB; ISSN: 0044-4502 LA Russian

L106 ANSWER 8 OF 19 CA COPYRIGHT 1995 ACS

TI Synthesis and cation-complexing ability of oxo crown ethers containing a ***ferrocene*** nucleus
AU Izumi, Taeko; Tezuka, Takeshi; Yusa, Sachiko; Kasahara, Akira
SO Bull. Chem. Soc. Jpn. (1984), 57(9), 2435-9
CODEN: BCSJAS; ISSN: 0009-2673 LA English

L106 ANSWER 9 OF 19 CA COPYRIGHT 1995 ACS

TI Syntheses of acyclic polyethers containing a ***ferrocene*** nucleus and its ***extraction*** ability
AU Akabori, Sadatoshi; Ohtomi, Michiko; Sato, Masaru; Ebine, Seiji
SO Bull. Chem. Soc. Jpn. (1983), 56(5), 1455-8
CODEN: BCSJAS; ISSN: 0009-2673 LA English

L106 ANSWER 10 OF 19 CA COPYRIGHT 1995 ACS

TI Syntheses of polyoxathia[n]ferrocenophanes and its ***extraction*** ability with metal cations
AU Akabori, Sadatoshi; Habata, Yoichi; Sato, Masaru; Ebine, Seiji
SO Bull. Chem. Soc. Jpn. (1983), 56(5), 1459-61
CODEN: BCSJAS; ISSN: 0009-2673 LA English

L106 ANSWER 11 OF 19 CA COPYRIGHT 1995 ACS

TI ***Extraction*** of silver from palladium-containing alloys
IN Volkova, G. V.; Gubin, S. P.; Golubova, E. A.; Kachin, S. V.; Zolotov, A. F.
SO U.S.S.R. From: Otkrytiya, Izobret., Prom. Obratsty, Tovarye Znaki 1982, (43), 148.
CODEN: URXXAF LA Russian

L106 ANSWER 12 OF 19 CA COPYRIGHT 1995 ACS

TI Performance of electrolysis with two-phase electrolyte. The trickle electrode for the electrochemical conversion of substances with low solubility in aqueous electrolytes with special respect to electrochemical ***extraction*** processes
AU Feess, Hans; Wendt, Hartmut
SO J. Chem. Technol. Biotechnol. (1980), 30(6), 297-312
CODEN: ICTBDC LA English

L106 ANSWER 13 OF 19 CA COPYRIGHT 1995 ACS

TI ***Extraction*** -photometric determination of silicon with ***ferrocene***

- AB Krichevskaya, A. M.; Solomatin, V. T.; Golubyanikova, Yu. A.
 SO Zavod. Lab. (1977), 43(11), 1315-16
 CODEN: ZVDLAU; ISSN: 0044-1910 LA Russian
- L106 ANSWER 14 OF 19 CA COPYRIGHT 1995 ACS
 TI Friction materials
 IN Littlefield, John B.
 SO U.S., 5 pp.
 CODEN: USXXAM
 LA English
- L106 ANSWER 15 OF 19 CA COPYRIGHT 1995 ACS
 TI The behavior of ferrocene and ruthenocene in weakly to strongly protic media. Implications of the mechanism of substitutions involving the proton as the electrophile
 AU Cerichelli, Giorgio; Illuminati, Gabriello; Ortaggi, Giancarlo;
 Giuliani, Anna Maria
 SO J. Organomet. Chem. (1977), 127(3), 357-70
 CODEN: JORCAI LA English
- L106 ANSWER 16 OF 19 CA COPYRIGHT 1995 ACS
 TI Influence of coexisting materials on the formation of carbonaceous mesophase in pitch. 3. Effect of ferrocene on nucleation and growth processes of mesophase
 AU Oi, Shoichi; Yamada, Yasuhiro; Honda, Hidemasa
 SO Tanso (1976), 85, 47-54
 CODEN: TANSO3 LA Japanese
- L106 ANSWER 17 OF 19 CA COPYRIGHT 1995 ACS
 TI Synthesis of ferrocenylacetylenes
 AU Abram, T. S.; Watts, W. E.
 SO Synth. React. Inorg. Met.-Org. Chem. (1976), 6(1), 31-33
 CODEN: SRIMCN LA English
- L106 ANSWER 18 OF 19 CA COPYRIGHT 1995 ACS
 TI ***Extraction*** -amperometric determination of phosphorus using
 ferrocene in aqueous-organic media
 AU Solomatin, V. T.; Artemova, T. N.; Yakovlev, P. Ya.
 SO Zh. Anal. Khim. (1974), 29(3), 525-8
 CODEN: ZAKH88 LA Russian
- L106 ANSWER 19 OF 19 CA COPYRIGHT 1995 ACS
 TI Formation of soot and polycyclic aromatic hydrocarbons in simple hydrocarbon air-diffusion flames and its inhibition by additives
 AU Spengler, Guenter; Haupt, Gerhard
 SO Erdöl Kohle, Erdgas, Petrochem. (1969), 22(11), 679-84
 CODEN: EKEPAB LA German
- => d 1106 1,2,3,5,7,8,9,10,11,12,13,15,17,18 abs
- L106 ANSWER 1 OF 19 CA COPYRIGHT 1995 ACS
 AB Mono and bis(crown ether)s in which monooxa-15-crown-4 or monooxa-18-crown-5 were linked to 1- and 1,1'-position of
 ferrocene were prep'd. by std. condensation reaction.
 Complexing ability of these compds. with alkali, alk. earth, and transition metal cations were det'd. by the solvent extrn. method.
 The compds. showed lower affinity toward alkali and alk. earth metal cations and appreciable affinity toward transition metal cations. A striking difference was obs'd. between ***ferrocene*** mono and bis(crown ether)s in their ***extractabilities*** for K⁺, Sr²⁺, and Ag⁺. Electronic spectra of bis(crown ether)s with Ag picrate showed bathochromic shifts, suggesting the existence of a sandwich-type complex.
- L106 ANSWER 2 OF 19 CA COPYRIGHT 1995 ACS
 AB Title only translated.
- L106 ANSWER 3 OF 19 CA COPYRIGHT 1995 ACS
 GI Diagram(s) available in offline prints and/or printed CA issue.

- AB Polyalkylamines having the general formula
 $R_1(CH_2)_mNH(CH_2)_3NR_3(CH_2)_nNH(CH_2)_2R_2$ ($R_{1,2} = 2$ -pyridyl; $m = 2-4$; $R_3 = H$ if $m = 2$ or 4 , Me if $m = 3$),
 $R_1(CH_2)_2NH(CH_2)_2X(CH_2)_2NH(CH_2)_2R_2$ ($R_{1,2} = 2$ -pyridyl, amino; $X = 2,6$ -pyridyl), or
 $R_1(CH_2)_mNH(CH_2)_2nX(CH_2)_nNH(CH_2)_2R_2$ ($R_{1,2} = N$ -contg. org. group; $m, n, o, p = 1-4$; $X = 2,6$ -pyridyl etc.; $R_3 = H$, lower alkyl, or aralkyl; n noteq. o), and polyalkylamine-metal complexes having general formula I ($R_{1,2} = N$ -contg. org. group coordinated to M; M = metal) are claimed. These metal complexes are used as carrier compds. in a (described) electrochem. cell, including, e.g., an O-permeable membrane, for the extrn. of a ligand, esp. mol. O, from a 1st fluid environment and for release of the ligand. By providing an electrocatalyst capable of rapid electron transfer and having an electropotential less than that of the carrier compd., low-energy electron transfer between the carrier compd. and the electrodes of the cell is achieved. The use of electrodes with catalytically active surface sites leads to efficient electron transfer between the carrier compds. and the electrodes of the electrochem. cell, resulting in lower energy consumption and/or increased O output. Thus, 1,11-bis(2-benzylimidazolyl)-2,6,10-triazaundecane.3HCl (BTAD) was prep'd. by dissolving pyridine-2-carboxyaldehyde (7.44 g) and 1,5,9-trioxanonane (2.6 g) in approx. 60 mL abs. EtOH, heating at 50 degree. for 10 min, hydrogenating the soln. at room temp. using 1.5 g 5% Pd on charcoal, filtering, and bubbling dry HCl(g) through the soln. to form a ppt. that was sepd., washed with and recrystd. from EtOH. The product was then dissolved in a 70/30 (vol./vol.) MeOH/concd. NH4OH mixt., chromatographed over silica gel using the same solvent mixt., and the eluate was partially evap'd., filtered, and evap'd., and the product was recrystd. from EtOH. The complex Co(BTAD)Cl2 was then prep'd.; this complex forms both monomeric and dimeric complexes with mol. O. In coulometric expts., at 0.975 V the O release was 1.56 μ L/min, max. O2 % (described) 11, at 0.5 V (min.) and voltage window (described) 0.75.
- L106 ANSWER 5 OF 19 CA COPYRIGHT 1995 ACS
 GI For diagram(s), see printed CA issue.
 AB The title crown ethers I ($n = 2-5$) and II were synthesized by the reaction of 1,2- or 1,3-bis(hydroxymethyl)***ferrocene*** with 4-MeC6H4SO3CH2(CH2OCH2)_nCH2O3SC6H4Me-4 ($n = 1-5$) with Me3COK by a high-diln. method. I and II were exam'd. for complexation behavior with alkali, alk. earth, and transition-metal cations by solvent extrn. They ext. TI ions most effectively.
- L106 ANSWER 7 OF 19 CA COPYRIGHT 1995 ACS
 AB Ag was det'd. in Cu-Zn ores by extrn. from 2M HNO3 into 0.1M dibexyl sulfide in CHCl3, diln. approx. 2:3 with EtOH, addn. of H2SO4 to 2 mol/L concn., and titrn. with std. ***ferrocene*** soln. in EtOH by using a Pt indicator electrode at 0.8 V vs. Hg sulfate ref.

electrode. The relative std. deviation was 0.02-0.03 for 16-33% Ag.

The redox potentials of Ag⁺/Ag and ferrocenium/ferrocene systems were detd. in various solvent mixts. The voltammetric curves of anal. system components are also given.

L106 ANSWER 8 OF 19 CA COPYRIGHT 1995 ACS

GI For diagram(s), see printed CA Issue.

AB Diols HOCH₂XCH₂OH [X = (CH₂OCH₂)_n, 2,6-pyridinyldiene, 2,5-furanyldiene, 2,5-thiophenyldiene, 1,3-phenylene, CH₂SCH₂; n = 0-3] reacted with

1,1'-bis(chloroformyl) ferrocene (I) to give the bridged compds. II and the diols III in 1-28 and 19-67% yields, resp. The diols III reacted with addnl. I to form the ferrocenyl crown ethers

IV in 5-39% yield. Although II and IV (same X's) generally extd.

<10% of Na⁺, K⁺, Ba²⁺, Tl⁺, and Ag⁺ in H₂O-CH₂Cl₂, II and IV (X = 2,6-pyridinyldiene) were more effective for Na⁺, K⁺, and Ag⁺, with

10.1-71.5% extn. IV (X = 2,6-pyridinyldiene, 1,3-phenylene) extd.

71.5, 47.1% Ag⁺ and 69.7, 79.3% Hg⁺.

L106 ANSWER 9 OF 19 CA COPYRIGHT 1995 ACS

GI For diagram(s), see printed CA Issue.

AB Acyclic polyethers (I, n = 0-3) were synthesized by a one-pot

reaction of 1,1'-diacetoxyferrocene with X(CH₂CH₂O)_nMe (X = halo).

Also, ferrocene derivs. II (n = 2-4) were synthesized by

the reaction of potassium salt of hydroxyferrocene with Br(CH₂CH₂O)_nCH₂CH₂Br in DMF. On the addn. of

alkali metal thiocyanate in methanol, a hypsochromic shift and an

increasing intensity of the absorption band at 438 nm were obsd. in I,

suggesting the complexing of I with cations. However, a similar

spectral change could not be obsd. in II. I (n = 3) exts.

silver and thallium ions most effectively, the extn. efficiency of several

metal cations being in the order: Ag⁺ > Tl⁺ > Cs⁺ > K⁺ > Li⁺ > Na⁺.

L106 ANSWER 10 OF 19 CA COPYRIGHT 1995 ACS

GI For diagram(s), see printed CA Issue.

AB Mononuclear polyoxathiaferrocenophanes I (n = 0-3) and binuclear

polyoxadithiaferrocenophanes II were synthesized by

treating ferrocene III (R = OAc) with KOH and

CICH₂(CH₂OCH₂)_nCH₂Cl to

give III (R = CH₂(CH₂OCH₂)_nCH₂Cl), which reacted

with Na₂S to give I and II. The complexing ability of I was measured. I (n =

3) extd.

metal cations in the order: Tl⁺ > mchgt. Rb⁺ > K⁺ > Cs⁺ > Na⁺ > Li⁺.

L106 ANSWER 11 OF 19 CA COPYRIGHT 1995 ACS

AB Ag is extd. by dissolving the alloy in HNO₃ and sepn. of Ag from the

soln. by redn. The process is improved and the degree of

extn. of Ag is increased by adding NaOH at pH 10.0-12.0, Na₂

EDTA [139-33-3] at a 1:1-1.5 molar ratio to Pd, and H₂SO₄

1.0-2.0M to the soln. prior to redn., with the redn. using 1.5-2 fold

excess ferrocene [102-54-5] (based on the stoichiometric

amt.) in an org. solvent consisting of Me₂CO or EtOH.

L106 ANSWER 12 OF 19 CA COPYRIGHT 1995 ACS

AB The anodic oxidn. of ferrocene [102-54-5] in

org. solvents to ferrocenium salts was chosen as a model

system to study the conditions of 2-phase electrolyte electrolysis using

mixts. of an aq. electrolyte and an org. depolarizer in an org. solvent.

Expts. with single CH₂Cl₂ drops contg. 0.02-0.2 mol

ferrocene /dm³, deposited on a flat, horizontal Ni

electrode covered by an aq. electrolyte, e.g. 0.1M NaClO₄, showed

that the parameters governing the anodic oxidn. were: the elec.

cond. supplied to the org. phase by the anodically produced salts;

the small difference in surface tensions at the electrode-org.

phase and -aq. phase interfaces; and the direction and magnitude of the

p.d. at the aq.-org. interface. Quant. studies on the influence of the

different parameters were performed at a well-defined, stationary,

3-phase boundary. The results were used to construct a

trickle cell with apertured horizontal electrodes, useful for continuous

processing of 2-phase liq.-liq. electrolytes. Such electrodes

can be used for simultaneous electrochem. conversion of a

neutral depolarizer and extn. of its ionic conversion product out of the

org. solvent into the aq. electrolyte.

L106 ANSWER 13 OF 19 CA COPYRIGHT 1995 ACS

AB Si was detd. in electrotech. steel by extn. and

spectrophotometry. NH₄ molybdate was added to the dissolved sample to form

yellow molybdosilicic acid which was extd. from 1.2N HCl

medium with iso-BuOH to avoid interference from Fe(III), Cr(III), and

NO₃⁻. The ext. was treated with ferrocene in iso-BuOH to

produce the blue, reduced molybdosilicic acid; the absorbance was

measured at 810 nm. The method was used to detm. >0.001% Si.

L106 ANSWER 15 OF 19 CA COPYRIGHT 1995 ACS

AB The interaction of ferrocene and ruthenocene

with proton donors has been investigated by NMR spectroscopy in a

broad range of protic media, including such weakly protic agents as

CHCl₃, moderately acidic systems such as F₃CCO₂H, and more

strongly acidic systems such as concd. H₂SO₄. These metallocenes

undergo two kinds of interactions with acidic media, viz., π-H bonding in

which the cyclopentadienyl ring is the electron donor and, in the most

strongly protic solvents, metal protonation. The (H₀)_{1/2}

of ruthenocene and a group of ferrocene derivs. have

been detd. by a combined extractive

-spectrophotometric technique. These values show that the metal atom acts as a

very weak base. The H/D exchange rate of ruthenocene in

concd. D₂SO₄ decreases on increasing acid concn; the metal-protonated

species is not an intermediate in the reaction.

L106 ANSWER 17 OF 19 CA COPYRIGHT 1995 ACS

GI For diagram(s), see printed CA Issue.

AB Ferrocenylacetylenes I (R = H, Me, Me₃C, Bz, FeCO,

MeC:CH₂, FeC:CH₂, FeC:CH₂, R₁, R₂, R₃ = H, Me, Me₃C), and II (R₄

= H, Me)

(apprx.31 compds.) were prepd. Thus, a hot soln. of aq. NaOH was added to a refluxing soln. of $\text{FeCl}_2 \cdot \text{CHCHO}$ in dioxane followed by acidification with HCl. ***Extraction*** with ether and treatment of the residue from the ether ***extract*** with $\text{Me}_3\text{COK}-\text{Me}_2\text{SO}$ gave apprx.90% I (R-R3 = H).

L106 ANSWER 18 OF 19 CA COPYRIGHT 1995 ACS
AB The conditions of dissociation of molybdophosphate (I), the degree of separation of I from coexd. Mo, and the effect of elements found in steel on the extn. of I and subsequent amperometric titration of P on the basis of Mo were studied. The amperometric titration of Mo(VI) and I with ***ferrocene*** (II) was examd. in an iso-BuOH- $\text{Me}_2\text{CO}-\text{HCl}$ medium in which the aq/org. phase ratio was 1:1. The optimum HCl concn. was 6N. Mo(VI) was detd. in I by titration with II, and P was detd. from the 1:12 P/Mo ratio. On this basis, a highly sensitive extn.-amperometric method was developed for the detn. of P in steel without separation of Cr. The sensitivity of the detn. is 1 $\mu\text{g P}/20 \text{ ml}$ titrated soln. by using 0.001M II as the titrant. The error is 5-8%. Fe and Ni do not interfere. The interference of Ti, Nb, and W can be masked with NH_4F .

=> file registry

=> s c10H10Fe/mf

L107 17 C10H10FE/MF

=> s l107 and ferrocene

19878 FERROCENE
L108 12 L107 AND FERROCENE

=> d l107 1-17

L107 ANSWER 1 OF 17 REGISTRY COPYRIGHT 1995

ACS
RN 156670-89-2 REGISTRY
CN Ferrocene-1,2,3,4,5-d5 (9CI) (CA INDEX NAME)
MF ***C10 H5 D5 Fe***
CI CCS
SR CA

1 REFERENCES IN FILE CA (1967 TO DATE)

L107 ANSWER 2 OF 17 REGISTRY COPYRIGHT 1995

ACS
RN 144974-80-1 REGISTRY
CN Ferrocene-54Fe (9CI) (CA INDEX NAME)
MF ***C10 H10 Fe***
CI CCS, COM
SR CA

L107 ANSWER 3 OF 17 REGISTRY COPYRIGHT 1995

ACS
RN 144974-78-7 REGISTRY
CN Ferrocene-58Fe (9CI) (CA INDEX NAME)
MF ***C10 H10 Fe***
CI CCS, COM
SR CA

L107 ANSWER 4 OF 17 REGISTRY COPYRIGHT 1995

ACS
RN 120629-04-1 REGISTRY
CN Ferrocene-57Fe (9CI) (CA INDEX NAME)
MF ***C10 H10 Fe***
CI CCS
SR CA

1 REFERENCES IN FILE CA (1967 TO DATE)

L107 ANSWER 5 OF 17 REGISTRY COPYRIGHT 1995

ACS
RN 120628-99-1 REGISTRY
CN Ferrocenium-57Fe (9CI) (CA INDEX NAME)
MF ***C10 H10 Fe***
CI CCS, COM
SR CA

L107 ANSWER 6 OF 17 REGISTRY COPYRIGHT 1995

ACS
RN 119087-69-3 REGISTRY
CN Ferrocene, ion(2-) (9CI) (CA INDEX NAME)
MF ***C10 H10 Fe***
CI CCS
SR CA

1 REFERENCES IN FILE CA (1967 TO DATE)

L107 ANSWER 7 OF 17 REGISTRY COPYRIGHT 1995

ACS
RN 94387-53-8 REGISTRY
CN Ferrocene-55Fe (9CI) (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN Iron-55Fe, dicyclopentadienyl- (7CI)
MF ***C10 H10 Fe***
CI CCS

1 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

L107 ANSWER 8 OF 17 REGISTRY COPYRIGHT 1995

ACS
RN 94351-82-3 REGISTRY
CN Ferrocenium-55Fe (9CI) (CA INDEX NAME)
MF ***C10 H10 Fe***
CI CCS, COM

L107 ANSWER 9 OF 17 REGISTRY COPYRIGHT 1995

ACS
RN 94351-80-1 REGISTRY
CN Ferrocenium-59Fe (9CI) (CA INDEX NAME)
MF ***C10 H10 Fe***
CI CCS, COM

L107 ANSWER 10 OF 17 REGISTRY COPYRIGHT 1995

ACS
RN 86549-93-1 REGISTRY
CN Ferrocenium(2+) (9CI) (CA INDEX NAME)
MF ***C10 H10 Fe***
CI CCS

4 REFERENCES IN FILE CA (1967 TO DATE)

L107 ANSWER 11 OF 17 REGISTRY COPYRIGHT 1995

ACS
RN 72573-77-4 REGISTRY
CN Ferrocene, labeled with deuterium (9CI) (CA INDEX NAME)
MF ***C10 H10 Fe***
CI CCS
LC STN Files: CA, CAPLUS
IL XH-2

1 REFERENCES IN FILE CA (1967 TO DATE)

L107 ANSWER 12 OF 17 REGISTRY COPYRIGHT 1995

ACS
RN 67269-42-5 REGISTRY
CN Ferrocene, radical ion(1-) (9CI) (CA INDEX NAME)
OTHER NAMES:
CN Dicyclopentadienyl ferrate(1-)
MF ***C10 H10 Fe***
CI CCS, COM

6 REFERENCES IN FILE CA (1967 TO DATE)

L107 ANSWER 13 OF 17 REGISTRY COPYRIGHT 1995

ACS
RN 51608-40-3 REGISTRY
CN Ferrocenium-d10 (9CI) (CA INDEX NAME)
MF ***C10 D10 Fe***
CI CCS, COM

1 REFERENCES IN FILE CA (1967 TO DATE)

L107 ANSWER 14 OF 17 REGISTRY COPYRIGHT 1995

ACS
RN 12261-19-7 REGISTRY
CN Ferrocene-59Fe (8CI, 9CI) (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN Iron-59Fe, dicyclopentadienyl- (6CI, 7CI)

MF ***C10 H10 Fe***

CI CCS

7 REFERENCES IN FILE CA (1967 TO DATE)

L107 ANSWER 15 OF 17 REGISTRY COPYRIGHT 1995

ACS

RN 12125-80-3 REGISTRY

CN Ferrocenium (8Cl, 9Cl) (CA INDEX NAME)

OTHER NAMES:

CN Ferrocenium

CN Ferrocenium ion

CN Ferrocene(1+)

CN Ferrocenium cation

CN Ferrocenium

CN Ferrocenium ion

CN Iron(1+), bis(eta-5-2,4-cyclopentadien-1-yl)-

DR 51364-13-7

MF ***C10 H10 Fe***

CI CCS, COM

422 REFERENCES IN FILE CA (1967 TO DATE)

L107 ANSWER 16 OF 17 REGISTRY COPYRIGHT 1995

ACS

RN 12082-87-0 REGISTRY

CN Ferrocene-d10 (8Cl, 9Cl) (CA INDEX NAME)

OTHER CA INDEX NAMES:

CN Iron, di(cyclopentadienyl-d5)- (6Cl, 7Cl)

MF ***C10 D10 Fe***

CI CCS, COM

LC STN Files: CA, CAOLD, CAPLUS, CIACS,

CSCHEM, TOXLIB

25 REFERENCES IN FILE CA (1967 TO DATE)

L107 ANSWER 17 OF 17 REGISTRY COPYRIGHT 1995

ACS

RN 102-54-5 REGISTRY

CN Ferrocene (8Cl, 9Cl) (CA INDEX NAME)

OTHER NAMES:

CN Bis(eta-cyclopentadienyl)iron

CN Bis(cyclopentadienyl)iron

CN Catane TM

CN Di-pi-cyclopentadienyl iron

CN Di-2,4-cyclopentadien-1-yliron

CN Dicyclopentadienyliron

CN Ferrocene

CN Iron bis(cyclopentadienide)

CN Iron dicyclopentadienyl

CN Iron, bis(eta-5-2,4-cyclopentadien-1-yl)-

DR 55404-68-7, 51364-12-6

MF ***C10 H10 Fe***

CI CCS, COM

3818 REFERENCES IN FILE CA (1967 TO DATE)

=> file ca

=> s ferrocenium

L109 756 FERROCENIUM

=> s l109 and ion(w)extract?

566996 ION

116732 EXTRACT?

203 ION(W)EXTRACT?

L110 0 L109 AND ION(W)EXTRACT?

=> s l109 and extract?

116732 EXTRACT?

L111 4 L109 AND EXTRACT?

=> d l111 1-4 ti,au,so,la,abs

L111 ANSWER 1 OF 4 CA COPYRIGHT 1995 ACS

TI Effects of supporting electrolyte on the partitioning of cation/neutral couples into perfluorosulfonate films

AU Van Ryswyk, Hal; Kim, Chang Hee; Staley, Tabitha A.

SO J. Electroanal. Chem. (1992), 325(1-2), 351-7

CODEN: JECHES

LA English

AB Thermodyn. measurements have shown that the partitioning of cation/neutral couples into nafion is sensitive to the cation employed in the supporting electrolyte. This sensitivity suggests

that supporting electrolyte-induced changes in film morphol. are an important parameter in the use of polyelectrolytes.

L111 ANSWER 2 OF 4 CA COPYRIGHT 1995 ACS

TI Thermodynamics of partitioning for cation/neutral couples within perfluorosulfonate films

AU Van Ryswyk, Hal; Kim, Chang Hee; Solomon, Daniel

SO J. Electroanal. Chem. Interfacial Electrochem. (1989), 265(1-2), 317-21

CODEN: JEIEBC; ISSN: 0022-0728

LA English

AB The thermodyn. parameters for the partitioning of Co, Fe, Os, and Ru

cationic complexes with bipyridine or cyclopentane between nitrate solns. and Nafion films were detd. electrochem. The effects of the supporting electrolytes are considered.

L111 ANSWER 3 OF 4 CA COPYRIGHT 1995 ACS

TI ***Extraction*** -amperometric determination of silver in sulfide

ores

AU Maistrenko, V. N.; Murlinov, Yu. I.; Reznik, L. B.;

Amirkhanova, F.

A.; Nikitin, Yu. E.

SO Zh. Anal. Khim. (1985), 40(2), 272-4

CODEN: ZAKH88; ISSN: 0044-4502

LA Russian

AB Ag was detd. in Cu-Zn ores by extn. from 2M HNO3 into 0.1M dibexyl

sulfide in CHCl3, diln. appr. 2:3 with EtOH, addn. of

H2SO4 to 2 mol/L concn., and titrn. with std. ferrocene soln. in EtOH

by using a Pt indicator electrode at 0.8 V vs. Hg sulfate ref. electrode.

The relative std. deviation was 0.02-0.03 for 16-33% Ag.

The redox potentials of Ag+/Ag and ***ferrocenium*** /ferrocene

systems were detd. in various solvent mixts. The voltammetric curves of

anal. system components are also given.

L111 ANSWER 4 OF 4 CA COPYRIGHT 1995 ACS

TI Performance of electrolysis with two-phase electrolyte. The trickle

electrode for the electrochemical conversion of substances with low

solubility in aqueous electrolytes with special respect to electrochemical ***extraction*** processes

AU Feess, Hans; Wendi, Hartmut

SO J. Chem. Technol. Biotechnol. (1980), 30(6), 297-312

CODEN: JCTBDC

LA English

AB The anodic oxidn. of ferrocene [102-54-5] in org. solvents to

ferrocenium salts was chosen as a model system to study the

conditions of 2-phase electrolyte electrolysis using mixts. of an

aq. electrolyte and an org. depolarizer in an org. solvent.

Expts. with single CH2Cl2 drops contg. 0.02-0.2 mol ferrocene/dm3,

deposited on a flat, horizontal Ni electrode covered by an aq.

electrolyte, e.g. 0.1M NaClO4, showed that the parameters governing

the anodic oxidn. were: the elec. cond. supplied to the org. phase

by the anodically produced salts; the small difference in surface

tensions at the electrode-org. phase and -aq. phase interfaces; and

the direction and magnitude of the p.d. at the aq.-org. interface.

Quant. studies on the influence of the different parameters were

performed at a well-defined, stationary, 3-phase boundary. The results were used to construct a trickle cell with apertured horizontal electrodes, useful for continuous processing of 2-phase liq.-liq. electrolytes. Such electrodes can be used for simultaneous electrochem. conversion of a neutral depolarizer and extn. of its ionic conversion product out of the org. solvent into the aq. electrolyte.

=> s 1103 and redox(w)potential?

59682 REDOX
536489 POTENTIAL?
11599 REDOX(W)POTENTIAL?
L112 178 L103 AND REDOX(W)POTENTIAL?

=> s 1112 and review

1041874 REVIEW
L113 2 L112 AND REVIEW

=> d 1113 1-2 ti,au,so,la

L113 ANSWER 1 OF 2 CA COPYRIGHT 1995 ACS
TI pH and redox switches based on metal centres
AU Santis, G. De; Casa, M. Di; Fabbri, L.; Licchelli, M.; Mangano, C.; Pallavicini, P.; Perotti, A.; Poggi, A.; Sacchi, D.; et al.
SO NATO ASI Ser., Ser. C (1994), 448 133-52
CODEN: NSCSDW; ISSN: 0258-2023
LA English

L113 ANSWER 2 OF 2 CA COPYRIGHT 1995 ACS
TI Electrochemical potentials and organometallic reactivities
AU Butin, K. P.; Sirelets, V. V.; Reutov, O. A.
SO Metalloorg. Khim. (1990), 3(4), 814-26
CODEN: MEKHJX
LA Russian

=> d 1112 1-178 ti,au,so,la

L112 ANSWER 1 OF 178 CA COPYRIGHT 1995 ACS
TI Redox active LC ionomers: LC ionomers as materials for blends with amorphous ionomers
AU Wisemann, A.; Zentel, R.; Lieser, G.
SO Acta Polym. (1995), 46(1), 25-36
CODEN: ACPODY; ISSN: 0323-7648
LA English

L112 ANSWER 2 OF 178 CA COPYRIGHT 1995 ACS
TI pH and redox switches based on metal centres
AU Santis, G. De; Casa, M. Di; Fabbri, L.; Licchelli, M.; Mangano, C.; Pallavicini, P.; Perotti, A.; Poggi, A.; Sacchi, D.; et al.
SO NATO ASI Ser., Ser. C (1994), 448 133-52
CODEN: NSCSDW; ISSN: 0258-2023
LA English

L112 ANSWER 3 OF 178 CA COPYRIGHT 1995 ACS
TI Photoelectrochemical behavior of the lattice-matched single quantum well GaAs/AlxGa1-xAs electrodes
AU Lin, Yao; Xiao, Xu-Rui; Li, Xue-Ping; Yan, Chun-Hui; Zeng, Yi-Ping; Sun, Dian-Zhao; Zheng, Hai-Qun; Guo, Hong-Xi
SO Chin. Sci. Bull. (1994), 39(21), 1795-800
CODEN: CSBUEF; ISSN: 1001-6338
LA English

L112 ANSWER 4 OF 178 CA COPYRIGHT 1995 ACS
TI ***Redox*** ***Potentials*** in Ammonium Nitrate Solutions
AU Ngamini, E.; Amma, B. Bodio; Wandji, R.; Bessiere, J.
SO J. Chem. Eng. Data (1995), 40(2), 435-7
CODEN: JCEAAX; ISSN: 0021-9568
LA English

L112 ANSWER 5 OF 178 CA COPYRIGHT 1995 ACS

TI Adsorption behavior of functionalized ferrocenylalkane thiols and disulfide onto Au and ITO and electrochemical properties of modified electrodes: effects of acyl and alkyl groups attached to the ***ferrocene*** ring
AU Kondo, Toshihiro; Takechi, Miwa; Sato, Yukari; Uosaki, Kohei
SO J. Electroanal. Chem. (1995), 381(1-2), 203-9
CODEN: JECHES; ISSN: 0368-1874
LA English

L112 ANSWER 6 OF 178 CA COPYRIGHT 1995 ACS
TI Redox switchable ligands suitable for transition metal ions: protonation, complexation and electrochemical properties of a ***ferrocene*** -modified tetraamine diketone and its saturated analog
AU De Santis, Giancarlo; Fabbri, Luigi; Licchelli, Maurizio; Pallavicini, Piersandro; Perotti, Angelo; Poggi, Antonio
SO Supramol. Chem. (1994), 3(2), 115-23
CODEN: SCHEER; ISSN: 1061-0278
LA English

L112 ANSWER 7 OF 178 CA COPYRIGHT 1995 ACS
TI ***Redox*** ***potentials*** of bromo- and chloro(phthalocyaninato)bismuth(III) complexes
AU Isago, Hiroaki; Kagaya, Yutaka
SO Bull. Chem. Soc. Jpn. (1994), 67(12), 3212-15
CODEN: BCSJAE; ISSN: 0009-2673
LA English

L112 ANSWER 8 OF 178 CA COPYRIGHT 1995 ACS
TI ***Redox*** ***potential*** and substituent effects in ***ferrocene*** derivatives. II
AU Silva, M. Emilia N. P. R. A.; Pombeiro, Armando J. L.; Silva, Joao J. R. Frausto da; Herrmann, Rudolf; Dens, Norbert; Bozak, Richard E.
SO J. Organomet. Chem. (1994), 480(1-2), 81-90
CODEN: JORCAI; ISSN: 0022-328X
LA English

L112 ANSWER 9 OF 178 CA COPYRIGHT 1995 ACS
TI Redox-Switched Bonding of Protons to Ferrocenophanes, ***Ferrocene*** Cryptands, and Simple ***Ferrocene*** Amines. Correlation of X-ray Structural Data and Cyclic Voltammetry Derived ***Redox*** ***Potentials***
AU Plenio, Herbert; Yang, Jianjun; Diodone, Ralph; Heinze, Juergen
SO Inorg. Chem. (1994), 33(18), 4098-104
CODEN: INOCAJ; ISSN: 0020-1669
LA English

L112 ANSWER 10 OF 178 CA COPYRIGHT 1995 ACS
TI The effect of anions on the electrochemistry of zinc tetraphenylporphyrin
AU Seely, G. R.; Gust, D.; Moore, T. A.; Moore, A. L.
SO J. Phys. Chem. (1994), 98(41), 10659-64
CODEN: JPCHAX; ISSN: 0022-3654
LA English

L112 ANSWER 11 OF 178 CA COPYRIGHT 1995 ACS
TI Preparation of functionality surface by self-assembling method and characterization of molecular assembly
AU Uosaki, K.; Sato, Y.; Shimazu, K.; Yagi, I.
SO New Funct. Mater. (1993), Volume C, 711-16.
Editor(s): Edited by Tsunata, Teiji. Publisher: Elsevier, Amsterdam, Neth.
CODEN: 59NKAJ
LA English

L112 ANSWER 12 OF 178 CA COPYRIGHT 1995 ACS
TI Targeting Glucose Oxidase at Aspartate and Glutamate Residues with Organic Two-Electron Redox Mediators
AU Battaglini, Fernando; Koutoumanis, Maria; English, Ann M.

Mikkelsen, Susan R.
 SO Bioconjugate Chem. (1994), 5(5), 430-5
 CODEN: BCCHE; ISSN: 1043-1802
 LA English

L112 ANSWER 13 OF 178 CA COPYRIGHT 1995 ACS
 TI Molecular structure and electrochemical properties of the
 PU complex of 1,1'-bis(methylthio) ***ferrocene*** and the
 PU complexes of 1,4,7-trithia[7]- and 1,5,9-

trithia[9]([1,1']ferrocenophanes
 AU Sato, Masaru; Suzuki, Kaoru; Asano, Hirofumi; Sekino,
 Masato;
 Kawata, Yasushi; Habata, Yoichi; Akabari, Sadatoshi
 SO J. Organomet. Chem. (1994), 470(1-2), 263-9
 CODEN: JORCAI; ISSN: 0022-328X
 LA English

L112 ANSWER 14 OF 178 CA COPYRIGHT 1995 ACS
 TI Preparation of oligonucleotide having redox group
 IN Debitsudo, Akiyoshi
 SO Jpn. Kokai Tokkyo Koho, 5 pp.
 CODEN: JKKXAF
 LA Japanese

L112 ANSWER 15 OF 178 CA COPYRIGHT 1995 ACS
 TI Competitive self-assembly and electrochemistry of some
 ferrocenyl-n-alkanethiol derivatives on gold
 AU Creager, Stephen E.; Rowe, Gary K.
 SO J. Electroanal. Chem. (1994), 370(1-2), 203-11
 CODEN: JECHES; ISSN: 0368-1874
 LA English

L112 ANSWER 16 OF 178 CA COPYRIGHT 1995 ACS
 TI Spectrophotometric and electrochemical kinetic studies of
 poly(ethylene glycol)-modified horseradish peroxidase
 reactions in
 organic solvents and aqueous buffers
 AU Yang, Liu; Murray, Royce W.
 SO Anal. Chem. (1994), 66(17), 2710-18
 CODEN: ANCHAM; ISSN: 0003-2700
 LA English

L112 ANSWER 17 OF 178 CA COPYRIGHT 1995 ACS
 TI Mixed-Valence Molecules Based on
 Monohydridobis(ethylene)diamine)osmi-
 um(IV) and Metal Cyano Complexes
 AU Li, Zai-Wei; Yeh, Andrew; Taube, Henry
 SO Inorg. Chem. (1994), 33(13), 2874-81
 CODEN: INOCAL; ISSN: 0020-1669
 LA English

L112 ANSWER 18 OF 178 CA COPYRIGHT 1995 ACS
 TI Biodegradation of Soluble Redox Polymers. 1.
 (0.017)Ferrocene)amylose
 AU Gnedenko, Boris B.; Ryabov, Alexander D.
 SO Anal. Chem. (1994), 66(14), 2240-4
 CODEN: ANCHAM; ISSN: 0003-2700
 LA English

L112 ANSWER 19 OF 178 CA COPYRIGHT 1995 ACS
 TI Synthesis and intramolecular energy transfer of the
 ruthenium-
 ferrocene polynuclear complexes
 AU Duan, Chunying; You, Xiaozeng; Tao, Hui; Zhu,
 Longgen
 SO Gaodeng Xuexiao Huaxue Xuebao (1993), 14(11), 1492-
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 CODEN: KTHPDM; ISSN: 0251-0790
 LA Chinese

L112 ANSWER 20 OF 178 CA COPYRIGHT 1995 ACS
 TI Characteristics of monolayers of ***ferrocene***
 derivatives and
 estimation of electrical double layers formed in Langmuir
 films
 AU Kondo, Toshihiro; Aluja, Ramesh; Moebius, Dietmar;
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 Masamichi
 SO Bull. Chem. Soc. Jpn. (1994), 67(2), 315-20
 CODEN: BCSJAS; ISSN: 0009-2673
 LA English

L112 ANSWER 21 OF 178 CA COPYRIGHT 1995 ACS

TI 1,1'-Disubstituted ***Ferrocenes*** as Donors for
 Charge-Transfer Complexes. Synthesis, Structure,
 Conductivity, and
 Magnetic Properties
 AU Togni, Antonio; Hobi, Markus; Rihs, Gerty; Rist,
 Guenther; Albinati,
 Alberto; Zanello, Piero; Zech, Damian; Keller, Hugo
 SO Organometallics (1994), 13(4), 1224-34
 CODEN: ORGND7; ISSN: 0276-7333
 LA English

L112 ANSWER 22 OF 178 CA COPYRIGHT 1995 ACS
 TI Application of mediators in enzyme electrodes
 AU Wilke, Dorit; Muller, Helmut
 SO Bioforum (1992), 15(11), 402-4,406
 CODEN: BFRME3
 LA German

L112 ANSWER 23 OF 178 CA COPYRIGHT 1995 ACS
 TI Tungsten Carbyne Complexes Containing 1,1'-
 Bis(diphenylphosphino)
 ferrocene (dppf). Reverse Relationship between
 NMR Chemical
 Shifts of the Carbyne 13C and the 183W Nuclei and
 Molecular
 Structure of WCl(CO)2(dppf)(CPh)
 AU Sekino, Masato; Sato, Masaru; Nagasawa, Akira;
 Kikuchi, Koichi
 SO Organometallics (1994), 13(4), 1451-5
 CODEN: ORGND7; ISSN: 0276-7333
 LA English

L112 ANSWER 24 OF 178 CA COPYRIGHT 1995 ACS
 TI Facile synthesis of ***ferrocene*** biscrown ethers
 and
 ferrocene cryptands: NMR complexation studies
 and the
 redox-switched bonding of H+ and Na+
 AU Plenio, Herbert; El-Desoky, Hanaa; Heinze, Juergen
 SO Chem. Ber. (1993), 126(11), 2403-8
 CODEN: CHBEAM; ISSN: 0009-2940
 LA English

L112 ANSWER 25 OF 178 CA COPYRIGHT 1995 ACS
 TI Organometallic ferrocenyl polymers with variable,
 cooperative
 interaction between iron centers
 AU Foucher, Daniel A.; Honeyman, Charles H.; Nelson,
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 SO Angew. Chem. (1993), 105(12), 1843-5
 CODEN: ANCEAD; ISSN: 0044-8249
 LA German

L112 ANSWER 26 OF 178 CA COPYRIGHT 1995 ACS
 TI Quenching of luminescence of
 tris(bipyridyl)ruthenium(2+) by the
 ferrocene derivatives of trioxide
 AU Duan, Chunying; Zhu, Longgen; You, Xiaozeng
 SO Chin. Sci. Bull. (1993), 38(6), 462-6
 CODEN: CSBUER; ISSN: 1001-6538
 LA English

L112 ANSWER 27 OF 178 CA COPYRIGHT 1995 ACS
 TI Voltammetric study of organic metals. II. The effect of
 solvent
 variation on electrochemically grown crystals of organic
 charge-transfer complexes
 AU Sakura, Sachiko; Anzai, Hiroyuki
 SO Electrochim. Acta (1993), 38(15), 2343-50
 CODEN: ELCAAV; ISSN: 0013-4686
 LA English

L112 ANSWER 28 OF 178 CA COPYRIGHT 1995 ACS
 TI Alcohol aggregation at hydrophobic monolayer surfaces
 and its effect
 on interfacial redox chemistry
 AU Creager, Stephen E.; Rowe, Gary K.
 SO Langmuir (1993), 9(9), 2330-6
 CODEN: LANGD5; ISSN: 0743-7463
 LA English

L112 ANSWER 29 OF 178 CA COPYRIGHT 1995 ACS
 TI High molecular weight poly(***ferrocenediyl***
 -silanes).

synthesis and electrochemistry of $[(C_5H_4)Fe(C_5H_4)SiR_2]$
 In, R = Me,
 Et, n-Bu, n-Hex
 AU Nguyen, My T.; Diaz, A. F.; Dement'ev, Vyacheslav
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 SO Chem. Mater. (1993), 5(10), 1389-94
 CODEN: CMATEX; ISSN: 0897-4756
 LA English

L112 ANSWER 30 OF 178 CA COPYRIGHT 1995 ACS
 TI Electrochemistry of metallocenes at very negative and very
 positive potentials. Electrogenation of 17-electron $Cp_2Co_2^+$, 21-
 electron $Cp_2Co_2^-$, and 22-electron $Cp_2Ni_2^-$ species
 AU Bard, Allen J.; Garcia, Edwin; Kukharenko, S.; Strelets,
 Vladimir V.
 SO Inorg. Chem. (1993), 32(16), 3528-31
 CODEN: INOCAL; ISSN: 0020-1669
 LA English

L112 ANSWER 31 OF 178 CA COPYRIGHT 1995 ACS
 TI Redox behavior of ***ferrocene*** derivatives. 2.
 Bis(eta-5-tricyclo[5.2.1.0^{2,5}]deca-2,5,8-trien-6-yl)iron and
 related molecules
 AU Gallucci, Judith C.; Oprotnolla, Giuliana; Paquette, Leo
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 Luca; Schirch, Paulo F. T.; Sivik, Mark R.; Zanello,
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 SO Inorg. Chem. (1993), 32(11), 2292-7
 CODEN: INOCAL; ISSN: 0020-1669
 LA English

L112 ANSWER 32 OF 178 CA COPYRIGHT 1995 ACS
 TI Electrochemistry of chlorinated ***ferrocenes*** :
 stability of
 chlorinated ferrocenium ions
 AU Brown, Kylie N.; Gulyas, Peter T.; Lay, Peter A.;
 McAlpine, Neale
 S.; Masters, Anthony F.; Phillips, Leonidas
 SO J. Chem. Soc., Dalton Trans. (1993), (6), 835-40
 CODEN: JCDTBI; ISSN: 0300-9246
 LA English

L112 ANSWER 33 OF 178 CA COPYRIGHT 1995 ACS
 TI Oxidation of 1,1'-bis(methoxycarbonyl) ***ferrocene***
 by
 hexakis(N,N-dimethylformamide)iron(III) perchlorate in
 acetonitrile
 AU Jedlicka, Rudolf; Kirchner, Karl; Schmid, Roland
 SO J. Chem. Soc., Dalton Trans. (1993), (3), 417-21
 CODEN: JCDTBI; ISSN: 0300-9246
 LA English

L112 ANSWER 34 OF 178 CA COPYRIGHT 1995 ACS
 TI Medium effects on the redox properties of tris(2,2'-
 bipyridyl) ruthenium complexes
 AU McDevitt, Michael R.; Addison, Anthony W.
 SO Inorg. Chim. Acta (1993), 204(2), 141-6
 CODEN: ICHAA3; ISSN: 0020-1693
 LA English

L112 ANSWER 35 OF 178 CA COPYRIGHT 1995 ACS
 TI Synthesis, electrochemistry and complexation studies of
 new redox
 active bisferrocene acyclic and macrocyclic thioethers
 AU Beer, Paul D.; Nation, Jayne E.; Harman, Mary E.;
 Hursthouse,
 Michael B.
 SO J. Organomet. Chem. (1992), 441(3), 465-77
 CODEN: JORCAI; ISSN: 0022-328X
 LA English

L112 ANSWER 36 OF 178 CA COPYRIGHT 1995 ACS
 TI Enzyme catalysis at hydrogel-modified electrodes with
 redox polymer
 mediator
 AU Calvo, Ernesto J.; Donilowicz, Claudia; Diaz, Luis
 SO J. Chem. Soc., Faraday Trans. (1993), 89(2), 377-84
 CODEN: JCFTEV; ISSN: 0956-5000
 LA English

L112 ANSWER 37 OF 178 CA COPYRIGHT 1995 ACS

TI Substituted metal carbonyls. Part 21. $[M(CO)_5(dppf-P)]$
 [M = Cr, Mo
 or W; dppf = $Fe(C_5H_4PPh_2)_2$] as a metalloligand in
 heteropolymetallic
 aggregates of AuI, PdII and PtII. Crystal and molecular
 structures
 of $[PtCl_2((\mu-dppf)W(CO)_5)_2]$ and $[Mo(CO)_5(dppf-P)]$
 AU Phang, LaiTee; Au-Yeung, Steve C. F.; Hor, T. S.
 Andy; Khoo, Soo
 Beng; Zhou, Zhong Yuan; Mak, Thomas C. W.
 SO J. Chem. Soc., Dalton Trans. (1993), (1), 165-72
 CODEN: JCDTBI; ISSN: 0300-9246
 LA English

L112 ANSWER 38 OF 178 CA COPYRIGHT 1995 ACS
 TI Formation of cryptatium species in solution:
 electrochemistry of
 bipyridyl-, bipyrimidyl-, and bithiazole-based cryptates
 AU Echegoyen, Luis; Perez-Cordero, Eduardo; Regnaut de
 Vains, Jean
 Bernard; Roth, Christine; Lehn, Jean Marie
 SO Inorg. Chem. (1993), 32(5), 572-7
 CODEN: INOCAL; ISSN: 0020-1669
 LA English

L112 ANSWER 39 OF 178 CA COPYRIGHT 1995 ACS
 TI Correlation of the redox properties and stereochemical
 features of
 copper complexes of [18]aneN₂S₄ (1,4,10,13-tetrathia-
 7,16-
 diazacyclooctadecane) and its N,N'-dimethyl derivative
 Me₂[18]aneN₂S₄. Crystal structures of
 $[CuII([18]aneN_2S_4)](ClO_4)_2 \cdot H_2O$, $[CuII(Me_2[18]aneN_2S_4)](PF_6)_2$,
 $[CuI([18]aneN_2S_4)](BPh_4)$, $[CuI(Me_2[18]aneN_2S_4)]PF_6$ and
 $[CuII(Me_2[18]aneN_2S_4)(NCMe)_2](PF_6)_2$
 AU Atkinson, Nigel; Blake, Alexander J.; Drew, Michael G.
 B.; Forsyth,
 George; Gould, Robert O.; Lavery, Aidan J.; Reid, Gillian;
 Schroeder, Martin
 SO J. Chem. Soc., Dalton Trans. (1992), (20), 2993-3002
 CODEN: JCDTBI; ISSN: 0300-9246
 LA English

L112 ANSWER 40 OF 178 CA COPYRIGHT 1995 ACS
 TI Nickel thioether chemistry: a re-examination of the
 electrochemistry of $[Ni([9]aneS_3)_2]^{2+}$. The single-crystal
 x-ray
 structure of a nickel(III) thioether complex,
 $[NiIII([9]aneS_3)_2][H_5O_2][ClO_4]_6$ ([9]aneS₃ = 1,4,7-
 trithiacyclononane)
 AU Blake, Alexander J.; Gould, Robert O.; Halcrow,
 Malcolm A.; Holder,
 Alan J.; Hyde, Timothy I.; Schroeder, Martin
 SO J. Chem. Soc., Dalton Trans. (1992), (24), 3427-31
 CODEN: JCDTBI; ISSN: 0300-9246
 LA English

L112 ANSWER 41 OF 178 CA COPYRIGHT 1995 ACS
 TI Derivative cyclic voltammetry: applications in the
 investigation of
 the energetics of organometallic electrode reactions
 AU Tilset, Mats
 SO NATO ASI Ser., Ser. C (1992), 367(Energ. Organomet.
 Species), 109-29
 CODEN: NSCSDW; ISSN: 0258-2023
 LA English

L112 ANSWER 42 OF 178 CA COPYRIGHT 1995 ACS
 TI The anomalous electrochemical behavior of the
 tetrathioether
 macrocyclic complexes $[MoX_2(Me_8[16]aneS_4)]$ (X = Cl or
 Br): the
 x-ray structures of $[MoBr_2(Me_8[16]aneS_4)]^{+0}$ and
 modulation of
 redox ***potentials*** in conformers of the
 $[MoBr_2(Me_8[16]aneS_4)]^{+0}$ system
 AU Adachi, Tomohiro; Durrant, Marcus D.; Hughes, David
 L.; Pickett,
 Christopher J.; Richards, Raymond L.; Talarmin, Jean;
 Yoshida,
 Toshikatsu
 SO J. Chem. Soc., Chem. Commun. (1992), (19), 1464-7
 CODEN: JCCCAT; ISSN: 0022-4936

LA English

L112 ANSWER 43 OF 178 CA COPYRIGHT 1995 ACS
TI The acidity functions of solutions perchloric acid in binary DMSO-water solutions

AU Pendin, A. A.; Leontjevskaya, P. K.; Abdyrahmanova, G. T.
SO Vestn. St.-Peterb. Univ., Ser. 4: Fiz., Khim. (1992), (3), 43-8
100-101

CODEN: VSUKEH
LA Russian

L112 ANSWER 44 OF 178 CA COPYRIGHT 1995 ACS
TI Solvent effect on the ***redox*** ***potential*** of ***ferrocene*** derivatives using an ultramicroelectrode

AU Zhong, Zhi Hong; Matsumura-Isoe, Takeko; Ichimura, Akio
SO Anal. Sci. (1992), 8(6), 877-9

CODEN: ANSCEN; ISSN: 0910-6340
LA English

L112 ANSWER 45 OF 178 CA COPYRIGHT 1995 ACS

TI Redox-active monomeric and polymeric surfactants

AU Anton, P.; Heinze, J.; Laschewsky, A.

SO Langmuir (1993), 9(1), 77-85

CODEN: LANGD5; ISSN: 0743-7463

LA English

L112 ANSWER 46 OF 178 CA COPYRIGHT 1995 ACS

TI Redox properties of metallocenylmethylcarboxylates (C₅H₅MC₅H₄)_n+C(C₆H₅)₃-n (n = 1-3, M = iron, ruthenium, osmium)

AU Denisovich, L. I.; Peterleitner, M. G.; Rybinskaya, M. I.; Kreindlin, A. Z.

SO Metalloorg. Khim. (1992), 5(3), 615-20

CODEN: MEKHEX; ISSN: 0235-0114
LA Russian

L112 ANSWER 47 OF 178 CA COPYRIGHT 1995 ACS

TI Matrix chain-length dependence of the electrochemistry of electroactive molecules in molten ionic conductive polymer electrolytes

AU Shi, Gaoqun; Xue, Gi; Wu, Zhibin; Shen, Biao

SO J. Electroanal. Chem. (1992), 338(1-2), 353-7

CODEN: JECHES
LA English

L112 ANSWER 48 OF 178 CA COPYRIGHT 1995 ACS

TI Nonaqueous-electrolyte lithium batteries

IN Watanabe, Hiroshi; Yoshimura, Seiji; Takahashi, Masatoshi; Ooshiba, Ryuji; Furukawa, Saneshiro

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF
LA Japanese

L112 ANSWER 49 OF 178 CA COPYRIGHT 1995 ACS

TI Dependence of the flat-band potential of n-type gallium arsenide on the ***redox*** ***potential*** in methanol and acetonitrile

AU Ba, B.; Fotouhi, B.; Gabouze, N.; Gorochoy, O.; Cachet, H.

SO J. Electroanal. Chem. (1992), 334(1-2), 263-77

CODEN: JECHES
LA English

L112 ANSWER 50 OF 178 CA COPYRIGHT 1995 ACS

TI ***Ferrocene*** derivatives as electron carriers for selective oxidation and reduction reactions through a liquid membrane

AU De Santis, Giancarlo; Fabbri, Luigi; Licchelli, Maurizio; Monichino, Alberto; Pallavicini, Piersandro

SO J. Chem. Soc., Dalton Trans. (1992), (14), 2219-24

CODEN: JCDTBI; ISSN: 0300-9246
LA English

L112 ANSWER 51 OF 178 CA COPYRIGHT 1995 ACS

TI Determination of the surface potentials of solvents

AU Kristalik, L. I.; Alpatova, N. M.; Ovsyannikova, E. V.
SO J. Electroanal. Chem. (1992), 329(1-2), 1-8

CODEN: JECHES
LA English

L112 ANSWER 52 OF 178 CA COPYRIGHT 1995 ACS

TI Study of the adsorption of cationic surfactants on aqueous laponite

clay suspensions and laponite clay modified electrodes

AU Brahimi, Brahim; Labbe, Pierre; Reverdy, Gilbert

SO Langmuir (1992), 8(8), 1908-18

CODEN: LANGD5; ISSN: 0743-7463

LA English

L112 ANSWER 53 OF 178 CA COPYRIGHT 1995 ACS

TI Exploration of the ionizable metal cluster-electrode surface analogy: infrared spectroelectrochemistry of [Pt₂(CO)₃]₂N, and [Pt₃(CO)₄]₂N (n = 0 to -10) and comparisons with

potential-dependent spectra of carbon monoxide adlayers on platinum surfaces

AU Roth, Joseph D.; Lewis, Gregory J.; Safford, Lance K.; Jiang, Xudong; Dahl, Lawrence F.; Weaver, Michael J.

SO J. Am. Chem. Soc. (1992), 114(15), 6159-69

CODEN: JACSAT; ISSN: 0002-7863

LA English

L112 ANSWER 54 OF 178 CA COPYRIGHT 1995 ACS

TI Metalloocene-mediated amperometric biosensors for one-shot glucose determination

AU Atanasov, P.; Kaisheva, A.; Gamberov, S.; Iliev, I.

SO Sens. Actuators, B (1992), B8(1), 59-64

LA English

L112 ANSWER 55 OF 178 CA COPYRIGHT 1995 ACS

TI Influence of the solvent on the redox thermodynamics of some multinuclear coordination compounds

AU Blonk, H. L.; Ruelofsen, A. M.; Frelink, T.; Anders, M. J.; Schmitz, J. E. J.; Van der Linden, J. G. M.; Steggerda, J. J.

SO J. Phys. Chem. (1992), 96(14), 6004-12

CODEN: JPCHAX; ISSN: 0022-3654

LA English

L112 ANSWER 56 OF 178 CA COPYRIGHT 1995 ACS

TI ***Redox*** ***potential*** and substituent effects of ***ferrocene*** derivatives. Estimates of Hammett sigma_p and

Taft polar sigma_p* substituent constants

AU Silva, M. Emilia N. P. R. A.; Pombeiro, Armando J. L.; Franeto da Silva, Joao J. R.; Hermann, Rudolf; Deus, Norbert; Castilho, Tania

J. Silva, M. Fatima C. G.

SO J. Organomet. Chem. (1991), 421(1), 75-90

CODEN: JORCAI; ISSN: 0022-328X

LA English

L112 ANSWER 57 OF 178 CA COPYRIGHT 1995 ACS

TI The unusual electrochemical properties of the higher fullerene, chiral C₇₆

AU Li, Q.; Wudl, Fred; Thilgen, Carlo; Whetten, Robert L.; Diederich, Francois

SO J. Am. Chem. Soc. (1992), 114(10), 3994-6

CODEN: JACSAT; ISSN: 0002-7863

LA English

L112 ANSWER 58 OF 178 CA COPYRIGHT 1995 ACS

TI A solvent-independent reference potential in nonaqueous solvents

AU Ichimura, Akio; Wada, Hidenori; Kitagawa, Toyokichi

SO Anal. Sci. (1991), 7(Suppl., Proc. Int. Congr. Anal. Sci., 1991, Pt. 2), 1711-14

CODEN: ANSCEN; ISSN: 0910-6340

LA English

L112 ANSWER 59 OF 178 CA COPYRIGHT 1995 ACS
 TI Ferri level pinning at pyrite (FeS₂)/electrolyte junctions
 AU Mishra, K. K.; Osseo-Asare, K.
 SO J. Electrochem. Soc. (1992), 139(3), 749-52
 CODEN: JESQAN; ISSN: 0013-4651
 LA English

L112 ANSWER 60 OF 178 CA COPYRIGHT 1995 ACS
 TI Applications of metallocenes in rechargeable lithium batteries for overcharge protection
 AU Golovin, M. Neal; Wilkinson, David P.; Dudley, James T.; Holonko, David; Woo, Simon
 SO J. Electrochem. Soc. (1992), 139(1), 5-10
 CODEN: JESQAN; ISSN: 0013-4651
 LA English

L112 ANSWER 61 OF 178 CA COPYRIGHT 1995 ACS
 TI Substituent effects in multiply trimethylsilyl-substituted ***ferrocenes***. Molecular structure of 1,1',2,2',4,4'-hexakis(trimethylsilyl)ferrocenium tetrafluoroborate
 AU Okada, Jun; Albach, Rolf W.; Herdtweck, Eberhard; Wagner, Friedrich
 SO Polyhedron (1991), 10(15), 1741-8
 CODEN: PLYHDE; ISSN: 0277-5387
 LA English

L112 ANSWER 62 OF 178 CA COPYRIGHT 1995 ACS
 TI Electrochemistry of the [Cu(Hepa)₂]²⁺ couple (Hepa = di-2-pyridylamine)
 AU Cinquanti, Arnaldo; Opronolla, Giuliana; Zanello, Piero
 SO J. Chem. Soc., Dalton Trans. (1991), (11), 3161-3
 CODEN: JCDTBI; ISSN: 0300-9246
 LA English

L112 ANSWER 63 OF 178 CA COPYRIGHT 1995 ACS
 TI Redox and ion-pairing thermodynamics in self-assembled monolayers
 AU Rowe, Gary K.; Creager, Stephen E.
 SO Langmuir (1991), 7(10), 2307-12
 CODEN: LANGD5; ISSN: 0743-7463
 LA English

L112 ANSWER 64 OF 178 CA COPYRIGHT 1995 ACS
 TI Reduction of acetylferrocene with lithium aluminum hydride and resolution of the enantiomers with a chiral HPLC column: an experiment for the advanced undergraduate laboratory
 AU Hamilton, Dorothy E.
 SO J. Chem. Educ. (1991), 68(6), A143-A144
 CODEN: JCEDAB; ISSN: 0021-9584
 LA English

L112 ANSWER 65 OF 178 CA COPYRIGHT 1995 ACS
 TI Di- to tetranuclear rigid silyl-bridged ***ferrocenes***. Synthesis, cyclic voltammetry, and chemical oxidation
 AU Atzkern, H.; Hiermeier, J.; Koehler, F. H.; Steck, A.
 SO J. Organomet. Chem. (1991), 408(3), 281-96
 CODEN: JORCAI; ISSN: 0022-328X
 LA German

L112 ANSWER 66 OF 178 CA COPYRIGHT 1995 ACS
 TI Solid-state redox diode composed of an electropolymerized metallocene layer and a polymer electrolyte layer containing a redox couple in a mixed-valent state
 AU Nishihara, Hiroshi; Asai, Harumi; Aramaki, Kunisugu
 SO J. Chem. Soc., Faraday Trans. (1991), 87(11), 1771-7
 CODEN: JCFTEV; ISSN: 0956-5000
 LA English

L112 ANSWER 67 OF 178 CA COPYRIGHT 1995 ACS
 TI Redox properties of ferrocenylalkane thiols coadsorbed with linear n-alkanethiols on polycrystalline bulk gold electrodes
 AU Creager, Stephen E.; Rowe, Gary K.
 SO Anal. Chim. Acta (1991), 246(1), 233-9
 CODEN: ACACAM; ISSN: 0003-2670
 LA English

L112 ANSWER 68 OF 178 CA COPYRIGHT 1995 ACS

TI Diffusion and heterogeneous electron-transfer rates in acetonitrile and in polyether polymer melts by alternating current voltammetry at microdisk electrodes
 AU Wooster, T. T.; Longmire, M. L.; Watanabe, M.; Murray, Royce W.
 SO J. Phys. Chem. (1991), 95(13), 5315-21
 CODEN: JPCHAX; ISSN: 0022-3654
 LA English

L112 ANSWER 69 OF 178 CA COPYRIGHT 1995 ACS
 TI Electrocatalytic oxidation of ascorbic acid at chemically modified electrodes
 AU Kulys, J.; Drungiliene, A.
 SO Electroanalysis (N. Y.) (1991), 3(3), 209-14
 CODEN: ELANEU; ISSN: 1040-0397
 LA English

L112 ANSWER 70 OF 178 CA COPYRIGHT 1995 ACS
 TI Electrostatic ion-solvent interaction
 AU Krishalik, L. I.; Alpatova, N. M.; Ovsyannikova, E. V.
 SO Electrochim. Acta (1991), 36(3-4), 435-45
 CODEN: ELCAAV; ISSN: 0013-4686
 LA English

L112 ANSWER 71 OF 178 CA COPYRIGHT 1995 ACS
 TI Electrochemical study of sulfonated ***ferrocenes*** as redox mediators in enzyme electrodes
 AU Liudet, E.; Battaglini, F.; Calvo, E. J.
 SO J. Electroanal. Chem. Interfacial Electrochem. (1990), 293(1-2), 55-68
 CODEN: JEIEBC; ISSN: 0022-0728
 LA English

L112 ANSWER 72 OF 178 CA COPYRIGHT 1995 ACS
 TI Electrochemical potentials and organometallic reactivities
 AU Butin, K. P.; Strelets, V. V.; Rostov, O. A.
 SO Metalloorg. Khim. (1990), 3(4), 814-26
 CODEN: MEKHEX
 LA Russian

L112 ANSWER 73 OF 178 CA COPYRIGHT 1995 ACS
 TI A Schiff base derived redox-responsive receptor molecule and related compounds with potential as nonlinear optical materials
 AU Beer, Paul D.; Silcanyka, Harrison
 SO Polyhedron (1990), 9(8), 1091-4
 CODEN: PLYHDE; ISSN: 0277-5387
 LA English

L112 ANSWER 74 OF 178 CA COPYRIGHT 1995 ACS
 TI Anodic electropolymerization of films of polypyrrole functionalized with metal terpyridyl redox centers
 AU Collin, J. P.; Jouani, A.; Sauvage, J. P.
 SO J. Electroanal. Chem. Interfacial Electrochem. (1990), 286(1-2), 75-87
 CODEN: JEIEBC; ISSN: 0022-0728
 LA English

L112 ANSWER 75 OF 178 CA COPYRIGHT 1995 ACS
 TI Ferrocenyl compounds containing two hypervalent silicon species. Electrochemical studies
 AU Cerveau, Genevieve; Chuit, Claude; Colomer, Ernest; Corriu, Robert
 SO J. P.; Rey, Catherine
 SO Organometallics (1990), 9(9), 2415-17
 CODEN: ORGND7; ISSN: 0276-7333
 LA English

L112 ANSWER 76 OF 178 CA COPYRIGHT 1995 ACS
 TI Electrochemistry of the pi-pyrrolyl complexes of iron and manganese
 AU Peterleimer, M. G.; Denisovich, L. I.; Pysnograeva, N. I.; Kravtsov, D. N.
 SO Metalloorg. Khim. (1990), 3(3), 581-5
 CODEN: MEKHEX

LA Russian

L112 ANSWER 77 OF 178 CA COPYRIGHT 1995 ACS
 TI Mediated enzyme/wall-jet amperometric electrode in flow-injection monitoring of glucose
 AU Gunasingham, Hari; Tan, Chin Huat
 SO Electroanalysis (N. Y.) (1989), 1(5), 423-9
 CODEN: ELANEU; ISSN: 1040-0397
 LA English

L112 ANSWER 78 OF 178 CA COPYRIGHT 1995 ACS
 TI Determination of the hydrogen ion and chloride ion activities in hydrochloric acid
 AU Sella, C.; Bauer, D.
 SO Hydrometallurgy (1990), 23(2-3), 353-64
 CODEN: HYDRDA; ISSN: 0304-386X
 LA English

L112 ANSWER 79 OF 178 CA COPYRIGHT 1995 ACS
 TI Electrochemical studies of an oxidatively induced ring slippage in 17-electron (η^3 -indenyl)(η^5 -5-indenyl)V(CO)₂
 AU Miller, Glenn A.; Therien, Michael J.; Trogler, William C.
 SO J. Organomet. Chem. (1990), 383(1-3), 271-8
 CODEN: JORCAI; ISSN: 0022-328X
 LA English

L112 ANSWER 80 OF 178 CA COPYRIGHT 1995 ACS
 TI A comprehensive investigation of hydrochloric acid and bromine/ammonia(aq)-etched p-indium phosphide(InP) interfaces
 AU Segar, P. R.; Koval, C. A.; Koel, B. E.; Gebhard, S. C.
 SO J. Electrochem. Soc. (1990), 137(2), 544-52
 CODEN: JESOA; ISSN: 0013-4651
 LA English

L112 ANSWER 81 OF 178 CA COPYRIGHT 1995 ACS
 TI Potentiometric measurements of the standard potential of the ***ferrocene*** /ferricinium(I) couple: evaluation of proton medium effect
 AU Mukherjee, L. M.; Dasgupta, P.; Habibullah, Muhammad
 SO J. Bangladesh Acad. Sci. (1989), 13(2), 233-6
 CODEN: JBACDF; ISSN: 0378-8121
 LA English

L112 ANSWER 82 OF 178 CA COPYRIGHT 1995 ACS
 TI Convenient synthesis of tris(tetrabutylammonium) hexacyanoruthenate(III): first access to a pure salt of a hexacyanoruthenate(III) anion and to a coordination polymer thereof
 AU Eller, Stefan; Fischer, R. Dieter
 SO Inorg. Chem. (1990), 29(6), 1289-90
 CODEN: INOCAF; ISSN: 0020-1669
 LA English

L112 ANSWER 83 OF 178 CA COPYRIGHT 1995 ACS
 TI Electron transfer quenching of an excited amphiphilic tris(bipyridine)ruthenium(2+) derivative in Langmuir-Blodgett films containing various ***ferrocene*** derivatives as electron donors
 AU Kondo, T.; Yamada, H.; Nishiyama, K.; Suga, K.; Fujihira, M.
 SO Thin Solid Films (1989), 179, 463-9
 CODEN: THSFAP; ISSN: 0040-6090
 LA English

L112 ANSWER 84 OF 178 CA COPYRIGHT 1995 ACS
 TI ***Redox*** ***potential*** - Hammett's σ or Taft's σ^* constant relationships at ***ferrocene*** derivatives
 AU Rodrigues, M. Emilia N. P.; Pombeiro, Armando J. L.; Hermann, Rudolf
 SO Port. Electrochim. Acta (1989), 7(March), 107-12
 CODEN: PEACEZ
 LA English

L112 ANSWER 85 OF 178 CA COPYRIGHT 1995 ACS
 TI Stereochemical and electronic control of the copper(II)/(I) couple by diaza tetraaza (N2S4)-donor macrocycles
 AU Addison, Nigel; Blake, Alexander J.; Drew, Michael G. B.; Forsyth, George; Lavery, Aidan J.; Reid, Gillian; Schroder, Martin
 SO J. Chem. Soc., Chem. Commun. (1989), (15), 984-6
 CODEN: JOCCAT; ISSN: 0022-4936
 LA English

L112 ANSWER 86 OF 178 CA COPYRIGHT 1995 ACS
 TI Application of Nafion as a polymer solid electrolyte for voltammetry in the absence of a contacting electrolyte solution
 AU Harth, Rachel; Mor, Uri; Ozer, Dan; Battebstein, Armand
 SO J. Electrochem. Soc. (1989), 136(12), 3863-7
 CODEN: JESOA; ISSN: 0013-4651
 LA English

L112 ANSWER 87 OF 178 CA COPYRIGHT 1995 ACS
 TI Direct electrical communication between chemically modified enzymes and metal electrodes: III. Electron-transfer relay modified glucose oxidase and D-amino-acid oxidase
 AU Heller, Adam; Degani, Yinnon
 SO Redox Chem. Interfacial Behav. Biol. Mol., [Proc. Int. Symp. Redox Mech. Interfacial Prop. Mol. Biol. Importance], 3rd (1988), Meeting Date 1987, 151-71. Editor(s): Dryhurst, Glenn; Niki, Katsumi.
 Publisher: Plenum, New York, N. Y.
 CODEN: 56PMAE
 LA English

L112 ANSWER 88 OF 178 CA COPYRIGHT 1995 ACS
 TI Synthesis, structure and electronic properties of octakis(μ_3 -sulfido)hexakis(triethylphosphine)hexanungsten as a tungsten analog of the molecular model for superconducting Chevrel phases
 AU Saito, Taro; Yoshikawa, Akihiko; Yamagata, Tsuneki; Imoto, Hideo; Ueno, Kei
 SO Inorg. Chem. (1989), 28(18), 3588-92
 CODEN: INOCAF; ISSN: 0020-1669
 LA English

L112 ANSWER 89 OF 178 CA COPYRIGHT 1995 ACS
 TI Solvent dynamical effects in electron transfer: evaluation of electronic matrix coupling elements for metallocene self-exchange reactions
 AU McManis, George E.; Nielson, Roger M.; Gochev, Alexander; Weaver, Michael J.
 SO J. Am. Chem. Soc. (1989), 111(15), 5533-41
 CODEN: JACSAT; ISSN: 0002-7863
 LA English

L112 ANSWER 90 OF 178 CA COPYRIGHT 1995 ACS
 TI Complexes of rhenium carbonyl containing ferrocenyl-derived ligands: tunable electron density at rhenium by control of the redox state of the ferrocenyl ligand
 AU Miller, Timothy M.; Ahmed, Kazi J.; Wrighton, Mark S.
 SO Inorg. Chem. (1989), 28(12), 2347-55
 CODEN: INOCAF; ISSN: 0020-1669
 LA English

L112 ANSWER 91 OF 178 CA COPYRIGHT 1995 ACS
 TI Carbonyl-stabilized M(III) complexes of mononuclear and dinuclear arene complexes (M = iron, ruthenium)
 AU Merker, Jon M.; Geiger, William E.; Davis, James H., Jr.; Atwood, Martin D.; Grimes, Russell N.
 SO Organometallics (1989), 8(6), 1580-1
 CODEN: ORGND7; ISSN: 0276-7333

LA English

L112 ANSWER 92 OF 178 CA COPYRIGHT 1995 ACS
 TI Low-temperature electrochemical reduction of
 metalocenes to
 dianions

AU Kukharensko, S. V.; Koldasheva, E. M.; Srelets, V. V.
 SO Dokl. Akad. Nauk SSSR (1988), 303(1), 112-14
 [Chem.]

CODEN: DANKAS; ISSN: 0002-3264

LA Russian

L112 ANSWER 93 OF 178 CA COPYRIGHT 1995 ACS
 TI Electrochemical response of poly(1,1'-ferrocenylene)-
 modified
 electrode

AU Oyama, Noboru; Takizawa, Yumiko; Matsuda, Hiroaki;
 Yamamoto,
 Takakazu; Sanechika, Kenichi

SO Denki Kagaku oyobi Kogyo Butsuri Kagaku (1988),
 36(9), 781-2

CODEN: DKOKAZ; ISSN: 0366-9297

LA English

L112 ANSWER 94 OF 178 CA COPYRIGHT 1995 ACS
 TI Study of disubstituted ***ferrocenes*** by cyclic
 voltammetry

AU Yoo, Xiaozeng; Li, Cun; Chen, Jie; Chao, Qirong; Pan,
 Xin; Dai,
 Anbang

SO Kexue Tongbao (Foreign Lang. Ed.) (1987), 32(20),
 1410-14

CODEN: KHTPBU; ISSN: 0454-0948

LA English

L112 ANSWER 95 OF 178 CA COPYRIGHT 1995 ACS
 TI Voltammetric characteristics of electrodes based on
 tungsten
 carbides in some nonaqueous and mixed solvents

AU Hofman, B.; Scholl, H.
 SO Elektrokhimiya (1988), 24(9), 1199-204

CODEN: ELKKAX; ISSN: 0424-8570

LA Russian

L112 ANSWER 96 OF 178 CA COPYRIGHT 1995 ACS
 TI Oxidation of ascorbic acid by copper(II) and the
 ferrocenium ion in
 acetonitrile-water mixtures

AU Cox, Brian G.; Jedral, Wojciech; Palou, Josefina
 SO J. Chem. Soc., Dalton Trans. (1988), (3), 733-40

CODEN: JCDTBI; ISSN: 0300-9246

LA English

L112 ANSWER 97 OF 178 CA COPYRIGHT 1995 ACS
 TI One-electron oxidations of ***ferrocenes***: a pulse
 radiolysis
 study

AU Faraggi, Moshe; Weinraub, Dany; Broitman, Federico;
 DeFelippis,
 Michael R.; Klapper, Michael H.

SO Radiat. Phys. Chem. (1988), 32(2), 293-7
 CODEN: RPCHDM; ISSN: 0146-5724

LA English

L112 ANSWER 98 OF 178 CA COPYRIGHT 1995 ACS
 TI Direct electrical communication between chemically
 modified enzymes
 and metal electrodes. 2. Methods for bonding electron-
 transfer
 relays to glucose oxidase and D-amino-acid oxidase

AU Degani, Yimon; Heller, Adam
 SO J. Am. Chem. Soc. (1988), 110(8), 2615-20

SO J. Am. Chem. Soc. (1988), 110(8), 2615-20
 CODEN: JACSAT; ISSN: 0002-7863

LA English

L112 ANSWER 99 OF 178 CA COPYRIGHT 1995 ACS
 TI Solvent effects on the ***redox*** ***potentials***
 of
 potassium 12-tungstosilicate and 18-tungstodiphosphate

AU Keita, H.; Bouaziz, D.; Nadio, L.
 SO J. Electrochem. Soc. (1988), 135(1), 87-91

SO J. Electrochem. Soc. (1988), 135(1), 87-91
 CODEN: JESQAN; ISSN: 0013-4651

LA English

L112 ANSWER 100 OF 178 CA COPYRIGHT 1995 ACS

TI Heterojunction photoelectrodes. IV. Electrochemistry and
 photoelectrochemistry at indium tin oxide/nonaqueous
 electrolyte
 interfaces

AU Ho, S. I.; Rajeshwar, K.
 SO J. Electrochem. Soc. (1987), 134(10), 2491-6

SO J. Electrochem. Soc. (1987), 134(10), 2491-6
 CODEN: JESQAN; ISSN: 0013-4651

LA English

L112 ANSWER 101 OF 178 CA COPYRIGHT 1995 ACS
 TI Covalent binding of electron relays to glucose oxidase

AU Bartlett, Philip N.; Whitaker, Richard G.; Green,
 Monika J.; Frew,
 Jane

SO J. Chem. Soc., Chem. Commun. (1987), (20), 1603-4
 CODEN: JCCCAT; ISSN: 0022-4936

LA English

L112 ANSWER 102 OF 178 CA COPYRIGHT 1995 ACS
 TI General route to μ -hydroxo-bis(μ -acetato)-bridged
 heterometal
 dinuclear complexes. Syntheses, magnetic and redox
 properties,
 electronic spectra, and molecular structures of the [Cr(III)-
 Co(II)]
 and [Cr(III)-Fe(II)] species

AU Chaudhuri, Phalguni; Winter, Manuela; Kueppers, Heinz
 Josef;
 Wiegardt, Karl; Nuber, Bernhard; Weiss, Johannes

SO Inorg. Chem. (1987), 26(20), 3302-10
 CODEN: INOCAF; ISSN: 0020-1669

LA English

L112 ANSWER 103 OF 178 CA COPYRIGHT 1995 ACS
 TI Preparation and electrochemistry of modified polypyrrole
 films by
 anodic copolymerization techniques

AU Merz, A.; Baumann, R.; Hainherl, A.
 SO Makromol. Chem., Macromol. Symp. (1987), 8, 61-71

SO Makromol. Chem., Macromol. Symp. (1987), 8, 61-71
 CODEN: MCMSES

LA English

L112 ANSWER 104 OF 178 CA COPYRIGHT 1995 ACS
 TI Syntheses, reactivities, molecular structures, and physical
 properties of paramagnetic bis(tetraphenylcyclopentadienyl)
 complexes of vanadium, chromium, cobalt, and nickel

AU Castellani, Michael P.; Geib, Steven J.; Rheingold,
 Arnold L.;
 Troglor, William C.

SO Organometallics (1987), 6(8), 1703-12
 CODEN: ORGND7; ISSN: 0276-7333

LA English

L112 ANSWER 105 OF 178 CA COPYRIGHT 1995 ACS
 TI Potentiometric titration of copper(II) by ***ferrocene***
 in the
 presence of thiocyanates

AU Malyuta, V. F.; Pimenova, V. A.
 SO Zavod. Lab. (1987), 53(2), 11-13

SO Zavod. Lab. (1987), 53(2), 11-13
 CODEN: ZVDLAU; ISSN: 0044-1910

LA Russian

L112 ANSWER 106 OF 178 CA COPYRIGHT 1995 ACS
 TI Preparations, NMR spectra, and electrochemical properties
 of a
 (ferrocenylcarbonyl)palladium(II) complex and its
 derivatives with
 some chelate groups attached via two ligating nitrogen
 atoms

AU Onishi, Masayoshi; Hiraki, Katsuma; Konda, Hatsumi;
 Ishida,
 Yasuhiro; Ohama, Yushichiro; Uchibori, Yuko

SO Bull. Chem. Soc. Jpn. (1986), 59(1), 201-6
 CODEN: BCSJAS; ISSN: 0009-2673

LA English

L112 ANSWER 107 OF 178 CA COPYRIGHT 1995 ACS
 TI Electrochemistry of phosphoferrocenes. II.
 Electrochemical
 behavior of 3,3',4,4'-tetramethyl-1,1'-diphosphoferrocene
 bonded to
 M(CO)₅ (M = Cr, Mo, W) fragments forming
 heterometallic complexes
 with multiple redox centers

- AU Lemoine, Paul; Gross, Maurice; Braumstein, Pierre; Mathy, Francois;
 Deschamps, Bernard; Nelson, John H.
 SO J. Organomet. Chem. (1985), 295(2), 189-97
 CODEN: JORCAI; ISSN: 0022-328X
 LA English
 L112 ANSWER 108 OF 178 CA COPYRIGHT 1995 ACS
 TI Synthesis, molecular structure, and molybdenum complexes of
 1,1'-bis(diphenylphosphino)cobaltocene
 AU DuBois, Daniel L.; Eigenbrot, Charles W., Jr.; Miedaner, Alex;
 Smart, James C.; Hiltwanger, R. Curtis
 SO Organometallics (1986), 5(7), 1405-11
 CODEN: ORGND7; ISSN: 0276-7333
 LA English
 L112 ANSWER 109 OF 178 CA COPYRIGHT 1995 ACS
 TI Substituent effects in keto ***ferrocenes***
 AU Nagy, Agnes G.
 SO Acta Chim. Hung. (1985), 119(1), 33-8
 CODEN: ACHUDC; ISSN: 0231-3146
 LA English
 L112 ANSWER 110 OF 178 CA COPYRIGHT 1995 ACS
 TI Solvent-dependent redox thermodynamics as a probe of solvent
 shielding in lanthanide cryptates
 AU Tabib, Jila; Hupp, Joseph T.; Weaver, Michael J.
 SO Inorg. Chem. (1986), 25(11), 1916-18
 CODEN: INOCAJ; ISSN: 0020-1669
 LA English
 L112 ANSWER 111 OF 178 CA COPYRIGHT 1995 ACS
 TI Studies on biomimetic membranes. VII. Ion transport coupled to the
 transmembrane redox reaction mediated by
 ferrocene in the
 liposome system
 AU Shinbo, Toshio; Yamaguchi, Tomohiko; Nishimura, Koichiro; Sugura, Masaaki
 SO Kagaku Gijutsu Kenkyusho Hokoku (1985), 80(12), 563-71
 CODEN: KGKHEP
 LA Japanese
 L112 ANSWER 112 OF 178 CA COPYRIGHT 1995 ACS
 TI Closed, half open, and open ***ferrocenes***: redox behavior
 and electron spin resonance of the radical cations
 AU Elschenbroich, Christoph; Bilger, Edgar; Ernst, Richard D.; Wilson, David R.; Kralik, Michael S.
 SO Organometallics (1985), 4(11), 2068-71
 CODEN: ORGND7; ISSN: 0276-7333
 LA English
 L112 ANSWER 113 OF 178 CA COPYRIGHT 1995 ACS
 TI Solvent effects on the ***redox*** ***potentials*** of
 benzquinone
 AU Wilford, J. H.; Archer, M. D.
 SO J. Electroanal. Chem. Interfacial Electrochem. (1985), 190(1-2), 271-77
 CODEN: JEIEBC; ISSN: 0022-0728
 LA English
 L112 ANSWER 114 OF 178 CA COPYRIGHT 1995 ACS
 TI A specific change of the electronic and carbon-13 NMR spectra and
 redox ***potentials*** in 1,1'-
 dithia[ferrocenophanes].
 A novel interaction between the sulfur atom and the
 ferrocene nucleus
 AU Sato, Masaru; Tanaka, Shinsuke; Ebine, Seiji; Morinaga, Kenichi;
 Akao, Sadatoshi
 SO J. Organomet. Chem. (1985), 282(2), 247-53
 CODEN: JORCAI; ISSN: 0022-328X
 LA English
 L112 ANSWER 115 OF 178 CA COPYRIGHT 1995 ACS

- TI Potentiometric and amperometric titration of
 ferrocene by
 cerium(IV)
 AU Solomatin, V. T.; Balusov, V. A.; Makarov, N. V.; Ermolaeva, T. N.
 SO Izv. Vyssh. Uchebn. Zaved., Khim. Khim. Tekhnol. (1985), 28(5), 47-51
 CODEN: IVUKAR; ISSN: 0579-2991
 LA Russian
 L112 ANSWER 116 OF 178 CA COPYRIGHT 1995 ACS
 TI Open-circuit photopotentials and photoelectrochemical behavior of
 the silicon-doped alpha-iron oxide (Fe2O3) semiconductor electrode
 in acetonitrile solutions
 AU Sahami, Saeed; Kennedy, John H.
 SO J. Electrochem. Soc. (1985), 132(5), 1116-20
 CODEN: JESOA; ISSN: 0013-4651
 LA English
 L112 ANSWER 117 OF 178 CA COPYRIGHT 1995 ACS
 TI Preparation and characterization of [Fe4S4(SPh)4]2- and [Mo2FeS8X3(SPh)6]3- (Fe = C5H4FeC5H5, X = EtS and MeO), and their
 catalytic behaviors toward ethyne reduction
 AU Tanaka, Koji; Nakamoto, Masami; Tashiro, Yutaka; Tanaka, Toshio
 SO Bull. Chem. Soc. Jpn. (1985), 58(1), 316-21
 CODEN: BCSJAS; ISSN: 0009-2673
 LA English
 L112 ANSWER 118 OF 178 CA COPYRIGHT 1995 ACS
 TI Effect on ***redox*** ***potentials*** of
 hydrogen bonding
 from coordinated imidazole in metalloporphyrin complexes
 AU O'Brien, P.; Swelgart, D. A.
 SO Inorg. Chem. (1985), 24(9), 1405-9
 CODEN: INOCAJ; ISSN: 0020-1669
 LA English
 L112 ANSWER 119 OF 178 CA COPYRIGHT 1995 ACS
 TI Extraction-amperometric determination of silver in sulfide ores
 AU Maistrenko, V. N.; Murinov, Yu. I.; Reznik, L. B.; Amirkhanoova, F. A.; Nikitin, Yu. E.
 SO Zh. Anal. Khim. (1985), 40(2), 272-4
 CODEN: ZAKHAS; ISSN: 0044-4502
 LA Russian
 L112 ANSWER 120 OF 178 CA COPYRIGHT 1995 ACS
 TI 1,1'-Bis(N,N-dimethylamino) ***ferrocene***, 1,1'-bis(N,N-dimethylamino)cobaltocenium hexafluorophosphate and 1,1'-bis(N,N-dimethylamino)titanocene dichloride. Crystal structure of 1,1'-bis(N,N-dimethylamino)titanocene dichloride
 AU Stahl, Klaus Peter; Boche, Gernot; Massa, Werner
 SO J. Organomet. Chem. (1984), 277(1), 113-25
 CODEN: JORCAI; ISSN: 0022-328X
 LA English
 L112 ANSWER 121 OF 178 CA COPYRIGHT 1995 ACS
 TI Preparation and electrochemical investigation of monomeric complexes
 of molybdenum(0-VI) with the ligand 1,4,7-trimethyl-1,4,7-triazacyclononane (L). Crystal structure of [MoVLBr3](PF6)
 AU Backes-Dahmann, Gabriele; Herrmann, Willy; Wieghardt, Karl; Weiss, Johannes
 SO Inorg. Chem. (1985), 24(4), 485-91
 CODEN: INOCAJ; ISSN: 0020-1669
 LA English
 L112 ANSWER 122 OF 178 CA COPYRIGHT 1995 ACS
 TI Correlation of the photoelectrochemistry of the amorphous
 hydrogenated silicon/methanol interface with bulk semiconductor properties

AU Gronet, Chris M.; Lewis, Nathan S.; Cogan, George W.; Gibbons, James F.; Moddel, Garret R.; Wiesmann, Harold
 SO J. Electrochem. Soc. (1984), 131(12), 2873-80
 CODEN: JESOA; ISSN: 0013-4651
 LA English

L112 ANSWER 123 OF 178 CA COPYRIGHT 1995 ACS
 TI Bridged ***ferrocenes***. II. 2,2'- and 3,3'-Trimethylene[1,1]ferrocenophane
 AU Singletary, Nancy J.; Hillman, Manny; Danplaise, Helen; Kwick, Aake; Kerber, Robert C.
 SO Organometallics (1984), 3(9), 1427-34
 CODEN: ORGND7; ISSN: 0276-7333
 LA English

L112 ANSWER 124 OF 178 CA COPYRIGHT 1995 ACS
 TI Bridged ***ferrocenes***. 10. Structural phenomena
 AU Hillman, Manny; Fujita, Etsuko; Dauplaise, Helen; Kwick, Aake; Kerber, Robert C.
 SO Organometallics (1984), 3(8), 1170-7
 CODEN: ORGND7; ISSN: 0276-7333
 LA English

L112 ANSWER 125 OF 178 CA COPYRIGHT 1995 ACS
 TI Electrochemistry of phosphaferrrocenes. I. Comparison of the redox properties of ***ferrocene***, diphosphaferrrocene, 3,4-dimethyl-1-phosphaferrrocene and 3,3',4,4'-tetramethyl-1,1'-diphosphaferrrocene
 AU Lemoine, Paul; Gross, Maurice; Braunstein, Pierre; Mahey, Francois; Deschamps, Bernard; Nelson, John H.
 SO Organometallics (1984), 3(8), 1303-7
 CODEN: ORGND7; ISSN: 0276-7333
 LA English

L112 ANSWER 126 OF 178 CA COPYRIGHT 1995 ACS
 TI Study of a ***ferrocene***-ferricinium electrode by the method of polarization measurements in aqueous-organic solvents
 AU Khachatryan, O. B.; Khomutov, N. E.; Khachatryan, T. A.
 SO Zh. Fiz. Khim. (1984), 58(3), 640-5
 CODEN: ZFKHA9; ISSN: 0044-4537
 LA Russian

L112 ANSWER 127 OF 178 CA COPYRIGHT 1995 ACS
 TI Study of water-salt media (calcium, sodium, and ammonium chlorides). Determination of redox properties of some systems
 AU Doudou, Babale Djam; Wandji, R.
 SO Rev. Sci. Tech. (1983), 3(1-2), 107-14
 CODEN: RSTEDH
 LA French

L112 ANSWER 128 OF 178 CA COPYRIGHT 1995 ACS
 TI Acylated ***ferrocenes***: synthesis and correlation of ***redox*** ***potentials*** with structure
 AU El-Hashash, M. A.; El-Nagdy, S.; Saleh, R.
 SO Indian J. Chem., Sect. A (1983), 22A(7), 605-6
 CODEN: IJCADU; ISSN: 0376-4710
 LA English

L112 ANSWER 129 OF 178 CA COPYRIGHT 1995 ACS
 TI Reactivity, electrochemical, and spectroscopic studies of type 2 copper-depleted Rhus vernicifera laccase
 AU Wynn, R. Max; Knaff, David B.; Holwerda, Robert A.
 SO Biochemistry (1984), 23(2), 241-7
 CODEN: BICHAW; ISSN: 0006-2960
 LA English

L112 ANSWER 130 OF 178 CA COPYRIGHT 1995 ACS
 TI Substituent effect in ketoferrrocenes
 AU Nagy, Agnes G.
 SO Hung. Acad. Sci., Cent. Res. Inst. Phys., KFKI (1983), KFKI-1983-69, 10 pp.
 CODEN: KFKRAA; ISSN: 0368-5330
 LA English

L112 ANSWER 131 OF 178 CA COPYRIGHT 1995 ACS
 TI Electron transfer in organometallic clusters. 3. Electron transfer and mixed-valence properties of substituted ***ferrocene***-tricobalt carbon clusters
 AU Colbran, Stephen B.; Robinson, Brian H.; Simpson, Jim
 SO Organometallics (1983), 2(8), 952-7
 CODEN: ORGND7; ISSN: 0276-7333
 LA English

L112 ANSWER 132 OF 178 CA COPYRIGHT 1995 ACS
 TI Heteronuclear mixed-valence compounds: transition metal carbonyl clusters with multiple redox centers
 AU Colbran, Stephen; Robinson, Brian H.; Simpson, Jim
 SO J. Chem. Soc., Chem. Commun. (1982), (23), 1361-2
 CODEN: JCCCAT; ISSN: 0022-4936
 LA English

L112 ANSWER 133 OF 178 CA COPYRIGHT 1995 ACS
 TI Solvent effects on ***redox*** ***potentials***. Studies in N-methylformamide
 AU Gritzner, G.
 SO J. Electroanal. Chem. Interfacial Electrochem. (1983), 144(1-2), 259-77
 CODEN: JEIEBC; ISSN: 0022-0728
 LA English

L112 ANSWER 134 OF 178 CA COPYRIGHT 1995 ACS
 TI Ferrocenometric determination of vanadium and iron in the presence of each other
 AU Malynka, V. F.; Solomatina, V. T.; Nemodruk, A. A.
 SO Zh. Anal. Khim. (1983), 38(1), 68-74
 CODEN: ZAKHAS; ISSN: 0044-4502
 LA Russian

L112 ANSWER 135 OF 178 CA COPYRIGHT 1995 ACS
 TI Stabilization of polyethylene coatings against light aging
 AU Trachenko, T. I.; Kalennikov, E. A.; Koretskaya, L. S.
 SO Zh. Prikl. Khim. (Leningrad) (1982), 55(11), 2511-15
 CODEN: ZPKHAB; ISSN: 0044-4618
 LA Russian

L112 ANSWER 136 OF 178 CA COPYRIGHT 1995 ACS
 TI Gibbs free energies of transfer and redox behavior of cations in N,N-diethylacetamide and N,N-dimethylformamide
 AU Boeck, J.; Gritzner, G.
 SO Z. Phys. Chem. (Weisbaden) (1982), 130(2), 181-92
 CODEN: ZPCFAX; ISSN: 0044-3336
 LA English

L112 ANSWER 137 OF 178 CA COPYRIGHT 1995 ACS
 TI Investigation on photoelectrochemical cells based on silicon-methanol interfaces. Part 1. n-type silicon
 AU Brondeel, Ph.; Madou, M.; Gomes, W. P.; Cardon, F.
 SO Sol. Energy Mater. (1982), 7(1), 23-32
 CODEN: SOEMDH; ISSN: 0165-1633
 LA English

L112 ANSWER 138 OF 178 CA COPYRIGHT 1995 ACS
 TI A correlation between the half-wave potential and the micelle-solubilization equilibrium of ***ferrocene*** in cationic micellar solutions
 AU Ohgawa, Y.; Aoyagi, S.
 SO J. Electroanal. Chem. Interfacial Electrochem. (1982), 136(2), 353-60
 CODEN: JEIEBC; ISSN: 0022-0728
 LA English

L112 ANSWER 139 OF 178 CA COPYRIGHT 1995 ACS
 TI Bridged ***ferrocenes***. VIII. Correlation of ***redox*** ***potentials*** with structure
 AU Fujita, Etsuko; Gordon, Barry; Hillman, Manny; Nagy, Agnes G.
 SO J. Organomet. Chem. (1981), 218(1), 105-14

CODEN: JORCAI; ISSN: 0022-328X

LA English

L112 ANSWER 140 OF 178 CA COPYRIGHT 1995 ACS
 TI Mechanistic aspects of the quenching of triplet methylene
 blue by

organic reductants

AU Ohno, Takeshi; Lichtin, Norman N.

SO J. Phys. Chem. (1982), 86(3), 354-60

CODEN: JPCHAX; ISSN: 0022-3654

LA English

L112 ANSWER 141 OF 178 CA COPYRIGHT 1995 ACS
 TI An investigation of the two step nature of Sandmeyer
 reaction

AU Galli, Carlo

SO J. Chem. Soc., Perkin Trans. 2 (1981), (11), 1459-61

CODEN: JCPKBH; ISSN: 0300-9580

LA English

L112 ANSWER 142 OF 178 CA COPYRIGHT 1995 ACS
 TI The characteristic of the interaction of substituted

ferrocenes with tetracyanoethylene

AU Balesieri, F.; Franco, M. A.; Sabbatini, M.

SO Inorg. Chim. Acta (1981), 54(1), 129-130

CODEN: ICHAA3; ISSN: 0020-1693

LA English

L112 ANSWER 143 OF 178 CA COPYRIGHT 1995 ACS
 TI Heteronuclear mixed-valence ions containing ruthenium
 and

ferrocene centers

AU Dowling, Norman; Henry, Patrick M.; Lewis, Nita A.

SO Inorg. Chem. (1981), 20(7), 2345-8

CODEN: INOCAJ; ISSN: 0020-1669

LA English

L112 ANSWER 144 OF 178 CA COPYRIGHT 1995 ACS
 TI Dependence of ***redox*** ***potentials*** for
 ferrocene-ferricenium system on solvent

composition

AU Balusov, V. A.; Koresnikov, Yu. D.; Solomatin, V. T.

Gubin, S. P.

Drozdov, V. A.; Penden, A. A.

SO Zh. Anal. Khim. (1981), 36(1), 44-7

CODEN: ZAKH8; ISSN: 0044-4502

LA Russian

L112 ANSWER 145 OF 178 CA COPYRIGHT 1995 ACS
 TI Interaction of complex gold(III) chlorides with
 ferrocene

AU Golubova, E. A.; Volkova, G. V.; Mel'nichenko, N. N.

SO Izv. Vyssh. Uchebn. Zaved., Tsvetn. Metall. (1981), (1),

58-60

CODEN: IVUTAK; ISSN: 0021-3438

LA Russian

L112 ANSWER 146 OF 178 CA COPYRIGHT 1995 ACS
 TI Syntheses, characterizations, and stereoelectronic
 stabilization of

organometallic electron reservoirs: the 19-electron d7

redox

catalysts .eta.5-C5R5Fe-.eta.6-C6R'6

AU Haimon, Jean Rene; Astruc, Didier; Michaud, Pascal

SO J. Am. Chem. Soc. (1981), 103(4), 758-66

CODEN: JACSAT; ISSN: 0002-7863

LA English

L112 ANSWER 147 OF 178 CA COPYRIGHT 1995 ACS
 TI A quantitative study of Fermi level pinning at a
 semiconductor-electrolyte interface

AU Chazalviel, J. N.; Truong, T. B.

SO J. Electroanal. Chem. Interfacial Electrochem. (1980),

114(2),

299-303

CODEN: JEIEBC; ISSN: 0022-0728

LA English

L112 ANSWER 148 OF 178 CA COPYRIGHT 1995 ACS
 TI Solvent effects on the ***redox*** ***potentials***
 of

cis-tetracarbonyl-bis(1,3 dimethylimidazolidin-2-

ylidene)chromium(0)

AU Gritzner, G.; Rechberger, P.; Gutmann, V.

SO J. Electroanal. Chem. Interfacial Electrochem. (1980),
 114(1),

129-37

CODEN: JEIEBC; ISSN: 0022-0728

LA English

L112 ANSWER 149 OF 178 CA COPYRIGHT 1995 ACS
 TI Polymer films on electrodes. Part II. Film structure and
 mechanism

of electron transfer with electrodeposited

poly(vinylferrocene)

AU Pearce, Pamela J.; Bard, Allen J.

SO J. Electroanal. Chem. Interfacial Electrochem. (1980),

112(1),

97-115

CODEN: JEIEBC; ISSN: 0022-0728

LA English

L112 ANSWER 150 OF 178 CA COPYRIGHT 1995 ACS
 TI Redox properties of the ***ferrocene***-ferricenium
 system in

some acid aqueous-organic media

AU Gubin, S. P.; Balusov, V. A.; Solomatin, V. T.

Penden, A. A.

SO Izv. Sib. Otd. Akad. Nauk SSSR, Ser. Khim. Nauk

(1980), (4), 81-8

CODEN: IZSKAB; ISSN: 0002-3426

LA Russian

L112 ANSWER 151 OF 178 CA COPYRIGHT 1995 ACS
 TI Solvent effects on the redox properties of tris(1,10-
 phenanthroline)iron(II/III) complexes

AU Mayer, U.; Kotocova, A.; Gutmann, V.

SO J. Electroanal. Chem. Interfacial Electrochem. (1979),

103(3),

409-18

CODEN: JEIEBC; ISSN: 0022-0728

LA English

L112 ANSWER 152 OF 178 CA COPYRIGHT 1995 ACS
 TI Solvent effect on the ***redox*** ***potential***
 of

quinone-semiquinone systems

AU Jaworski, Jan S.; Lesniewska, Ewa; Kalinowski, Marek

SO J. Electroanal. Chem. Interfacial Electrochem. (1979),

105(2),

329-34

CODEN: JEIEBC; ISSN: 0022-0728

LA English

L112 ANSWER 153 OF 178 CA COPYRIGHT 1995 ACS
 TI Constancy of the ***redox*** ***potential*** of a
 ferrocene-ferricenium system in mixed solvents

AU Gubin, S. P.; Penden, A. A.; Balusov, V. A.

SO Dokl. Akad. Nauk SSSR (1979), 248(2), 385-8 [Phys.

Chem.]

CODEN: DANKAS; ISSN: 0002-3264

LA Russian

L112 ANSWER 154 OF 178 CA COPYRIGHT 1995 ACS
 TI Redox reaction driven by diffusion of ions through an
 artificial

liquid membrane

AU Shinbo, Toshio; Sugiura, Masaaki; Kamo, Naoki;

Kobatake, Yonosuke

SO Chem. Lett. (1979), (9), 1177-80

CODEN: CMLTAG; ISSN: 0366-7022

LA English

L112 ANSWER 155 OF 178 CA COPYRIGHT 1995 ACS
 TI Semiconductor electrodes. XVIII. Liquid junction
 photovoltaic

cells based on n-gallium arsenide electrodes and acetonitrile

solutions

AU Kohl, Paul A.; Bard, Allen J.

SO J. Electrochem. Soc. (1979), 126(4), 603-8

CODEN: JESQAN; ISSN: 0013-4651

LA English

L112 ANSWER 156 OF 178 CA COPYRIGHT 1995 ACS
 TI ***Redox*** ***potentials*** of the
 ferrocene

- ferrocenium system in a water-acetic acid-sulfuric acid medium
 AU Balusov, V. A.; Koresnikov, Yu. D.; Solomatin, V. T.; Gubin, S. P.; Drozdov, V. A.
 SO Izv. Akad. Nauk SSSR, Ser. Khim. (1979), (2), 457-9
 CODEN: IASKA6; ISSN: 0002-3353
 LA Russian
- L112 ANSWER 157 OF 178 CA COPYRIGHT 1995 ACS
 TI Study of conditions for the amperometric titration of selenium(IV) by ***ferrocene*** in aqueous-organic media
 AU Solomatin, V. T.; Balusov, V. A.; Kozina, G. V.
 SO Zavod. Lab. (1978), 44(9), 1060-4
 CODEN: ZVDLAU; ISSN: 0044-1910
 LA Russian
- L112 ANSWER 158 OF 178 CA COPYRIGHT 1995 ACS
 TI Electrochemical properties of the ***ferrocene***-ferricenium system in acidic organo-aqueous media
 AU Ignatov, V. I.; Solomatin, V. T.; Nemodruk, A. A.
 SO Zh. Anal. Khim. (1978), 33(7), 1268-73
 CODEN: ZAKHAB; ISSN: 0044-4502
 LA Russian
- L112 ANSWER 159 OF 178 CA COPYRIGHT 1995 ACS
 TI Redox function of the acidity of water-alcohol (propanol, isopropanol) perchloric acid solutions based on a ***ferrocene***-ferricenium system
 AU Nikol'skii, V. P.; Pendin, A. A.; Susareva, O. M.
 SO Vzaïmodeistviya Rastvorakh Okislitel'no-Vosstanov. Sist. (1977), 124-33. Editor(s): Nikol'skii, B. P.; Pal'chevskii, V. V. Publisher: Izd. Leningr. Univ., Leningrad, USSR.
 CODEN: 38WLA4
 LA Russian
- L112 ANSWER 160 OF 178 CA COPYRIGHT 1995 ACS
 TI Amperometric titration of rhenium(VII) by ***ferrocene*** in the presence of molybdenum(VI) and tungsten(VI)
 AU Rzhavichev, S. P.; Kaplan, B. Ya.; Solomatin, V. T.
 SO Zavod. Lab. (1978), 44(1), 4-7
 CODEN: ZVDLAU; ISSN: 0044-1910
 LA Russian
- L112 ANSWER 161 OF 178 CA COPYRIGHT 1995 ACS
 TI Amperometric titration of mercury(I) and mercury(II) with ***ferrocene***
 AU Klochikova, V. G.; Solomatin, V. T.; Rzhavichev, S. P.; Ignatov, V.
 SO Izv. Vyssh. Uchebn. Zaved., Khim. Khim. Tekhnol. (1977), 20(5), 677-80
 CODEN: IVUKAR
 LA Russian
- L112 ANSWER 162 OF 178 CA COPYRIGHT 1995 ACS
 TI ***Redox*** ***potentials*** of the ferricenium/ferrocene system in acid organic-aqueous media
 AU Solomatin, V. T.; Rzhavichev, S. P.; Artemova, T. N.
 SO Zh. Anal. Khim. (1977), 32(6), 1077-82
 CODEN: ZAKHAB
 LA Russian
- L112 ANSWER 163 OF 178 CA COPYRIGHT 1995 ACS
 TI Relative stability of aromatic cation radicals in several solvent systems
 AU Kitani, Akira; Sasaki, Kazuo
 SO Denki Kagaku Oyobi Kogyo Butsuri Kagaku (1977), 45(7), 484-8
 CODEN: DKOKAZ
 LA Japanese
- L112 ANSWER 164 OF 178 CA COPYRIGHT 1995 ACS
 TI ***Redox*** ***potentials*** of the iron(III)-iron(II) system in some aqueous-organic media and potentiometric determination of iron in alloys using ***ferrocene***
 AU Solomatin, V. T.; Artemova, T. N.; Rzhavichev, S. P.

- SO Noveye Metody Ispyt. Metallov (1977), (4), 47-53
 From: Ref. Zh., Metall. 1977, Abstr. No. 6K12
 LA Russian
- L112 ANSWER 165 OF 178 CA COPYRIGHT 1995 ACS
 TI Amperometric titration of thallium(III) with ***ferrocene*** in aqueous organic media
 AU Solomatin, V. T.; Rzhavichev, S. P.
 SO Zh. Anal. Khim. (1976), 31(12), 2345-52
 CODEN: ZAKHAB
 LA Russian
- L112 ANSWER 166 OF 178 CA COPYRIGHT 1995 ACS
 TI Thermal oxidation of rubbers in the presence of ***ferrocene*** derivatives
 AU Kalennikov, E. A.; Ognevskaya, T. E.; Mitrokhina, T. N.; Dashevskaya, R. I.; Paushtin, Ya. M.
 SO Vestsi Akad. Nauk BSSR, Ser. Khim. Nauk (1977), (1), 58-61
 CODEN: VBSKAK
 LA Russian
- L112 ANSWER 167 OF 178 CA COPYRIGHT 1995 ACS
 TI Synthesis of unsaturated polyesters in the presence of ***ferrocene*** and its derivatives
 AU Red'ko, V. P.; Kutepov, D. F.; Skubin, V. K.; Reshetova, M. D.; Yankovskii, S. A.; Mironov, V. A.
 SO Plast. Massy (1976), (5), 11-12
 CODEN: FLMSAI
 LA Russian
- L112 ANSWER 168 OF 178 CA COPYRIGHT 1995 ACS
 TI Use of the water + sulfuric acid + sulfur trioxide solution as a solvent. I. Study of ***ferrocene*** and certain polynuclear hydrocarbons in the water + sulfuric acid solution. Comparison of electroactivity ranges
 AU Bouchet, M.; Bauer, D.
 SO J. Electroanal. Chem. Interfacial Electrochem. (1975), 63(2), 171-86
 CODEN: JEIEBC
 LA German
- L112 ANSWER 169 OF 178 CA COPYRIGHT 1995 ACS
 TI Amperometric titration of molybdenum(VI) by ***ferrocene*** solutions in aqueous-organic media
 AU Solomatin, V. T.; Yakovlev, P. Ya.; Artemova, T. N.; Lapshina, L. A.
 SO Zh. Anal. Khim. (1973), 28(11), 2197-201
 CODEN: ZAKHAB
 LA Russian
- L112 ANSWER 170 OF 178 CA COPYRIGHT 1995 ACS
 TI Properties of thallous ions in dimethylacetamide
 AU Breant, Mylene; Nicolas, Jean P.; Alam, Shafiqul; Laverne, Madeleine
 SO C. R. Acad. Sci., Ser. C (1973), 277(18), 855-7
 CODEN: CHDCAQ
 LA French
- L112 ANSWER 171 OF 178 CA COPYRIGHT 1995 ACS
 TI Polarography of ***ferrocene***-ferricenium redox system. II. Classical polarography in aqueous ethanol solutions
 AU Zhadnov, S. I.; Esimzhanova, A.
 SO Adsorbtsiya Dvoimoi Elek. Sloi Elektrokhim. (1972), 205-11.
 Editor(s): Frumkin, A. N. Publisher: "Nauka", Moscow, USSR.
 CODEN: 26PNAI
 LA Russian
- L112 ANSWER 172 OF 178 CA COPYRIGHT 1995 ACS
 TI Analysis of reactions in a nonaqueous medium using electrochemical methods
 AU Charlot, G.

SO Pure Appl. Chem. (1973), 34(1), 29-34

CODEN: PACHAS

LA French

L112 ANSWER 173 OF 178 CA COPYRIGHT 1995 ACS
TI Redox properties of binuclear complexes containing two different

metallocenyl groups C5H5FeC5H4CH2C5H4MC5H5 (M = iron, ruthenium, or osmium)

AU Smirnova, S. A.; Gubin, S. P.; Lubovich, A. A.; Denisovich, L. I.

SO Dokl. Akad. Nauk SSSR (1971), 200(3), 605-8 [Chem]

CODEN: DANKAS

LA Russian

L112 ANSWER 174 OF 178 CA COPYRIGHT 1995 ACS
TI ***Redox*** ***potentials*** of ***ferrocene*** and

silver in two low-dissociating solvents, 1,2-dimethoxyethane and tetrahydrofuran. Solvation of Ag+

AU Demange-Guerin, Georgette; Callet, Arlette

SO C. R. Acad. Sci., Ser. C (1971), 273(3), 235-8

CODEN: CHDCAQ

LA French

L112 ANSWER 175 OF 178 CA COPYRIGHT 1995 ACS
TI Polarographic study of the effect of transition metals on the

redox ***potentials*** of ***ferrocene***, acetylferrocene, and acetoacetylferrocene

AU Guerler, Oswald; Hennig, Horst

SO J. Electroanal. Chem. Interfacial Electrochem. (1971),

30(2), 253-60

CODEN: JEIEBC

LA German

L112 ANSWER 176 OF 178 CA COPYRIGHT 1995 ACS
TI cis- and trans-beta-substituted alpha-vinylferrocenes. Configuration of trisubstituted ethylenes

AU Kondze, A. A.; Gubin, S. P.

SO J. Organometal. Chem. (1970), 22(1), 157-69

CODEN: JORCAI

LA English

L112 ANSWER 177 OF 178 CA COPYRIGHT 1995 ACS
TI Electronic influence of ruthenocenyl as substituent

AU Gubin, S. P.; Lubovich, A. A.

SO J. Organometal. Chem. (1970), 22(1), 183-94

CODEN: JORCAI

LA English

L112 ANSWER 178 OF 178 CA COPYRIGHT 1995 ACS
TI Correlation between acidity scales in various solvents

AU Vedel, Jacques

SO Ann. Chim. (Paris) (1967), [14] 2(6), 335-41

CODEN: ANCPAC

LA French

=> s ferrocene? and redox(w)/potential?

7957 FERROCENE?

59682 REDOX

536489 POTENTIAL?

11599 REDOX(W)/POTENTIAL?

L1 REDOX(W)/POTENTIAL? 178 FERROCENE? AND

= > 18 19 20 21 25 29 31 32 33 44 45 56 61 65 66 84 91 93 115
126 139 160 162
164 ti, au, so, fa, absL1 ANSWER 18 OF 178 CA COPYRIGHT 1995 ACS
TI Biodegradation of Soluble Redox Polymers. 1.

(0.017ferrocene)amylose

AU Gnedenko, Boris B.; Ryabov, Alexander D.

SO Anal. Chem. (1994), 66(14), 2240-4

CODEN: ANCHAM; ISSN: 0003-2700

LA English

AB The reaction of amylose with NaH and trimethyl(ferrocenylmethyl)ammonium iodide (FcCH2NMe3+I-) in DMSO brought about a redox-labeled

polymer with a low degree of modification, viz. 1 ***ferrocene***

(Fc) residue per 60 glucose units. The prepn. (0.017ferrocene)amylose (I), displayed 1-electron

irreversible behavior at a pyrographite electrode in terms of the Delahay

formalism, the formal ***redox*** ***potential*** E.degree.

being equal to 0.38 V at pH 6 and 40.degree. vs. SCE.

Specific to

amylases, which carry out random hydrolysis, acceptance

of the

labeled amylose provided a significant increase in the peak

current

on cyclic voltammograms. The absence of potential drifts

suggested

that the effect was due an increase in the diffusion coeffs.

of the

amylose fragments in the course of enzymic digestion of I

This

proposal was confirmed by the simulation of exptl. cyclic

voltammograms. Several practical applications of the

results of

this study for electrochem. assaying the amylolytic activity

and

evaluation of the mechanisms of enzymic catalysis by

amylases

(alpha.-amylase; glucoamylase) were demonstrated.

L1 ANSWER 20 OF 178 CA COPYRIGHT 1995 ACS
TI Characteristics of monolayers of ***ferrocene***

derivatives and

estimation of electrical double layers formed in Langmuir

films

AU Kondo, Toshihiro; Ahuja, Ramesh; Moebius, Dietmar;

Fujihira,

Masamichi

SO Bull. Chem. Soc. Jpn. (1994), 67(2), 315-20

CODEN: BCSJAB; ISSN: 0009-2673

LA English

AB The surface potentials of the constituent monolayers were

measured

simultaneously with the .pi.-A isotherms to est. the p.d.

of the

elec. double layer formed in heterogeneous sensitizer

(S)/electron

donor (D) Langmuir-Blodgett (LB) films. The S

monolayer was a mixt.

of the [Ru(bpy)3]2+ complex with a long alkyl fatty acid

(arachidic

acid), while the D monolayer was one of 3 kinds of

ferrocene

amphiphiles with different signs of the hydrophilic head

groups and

with the same ***redox*** ***potential***. The

formation of

the p.d. between the charged head group of the amphiphile

and its

counterion at the H2O-air interface was confirmed; those

values were

consistent with the elec. double-layer effect on the

luminescent

lifetime of [Ru(bpy)3]2+ in the S monolayer in contact

with the D

monolayer.

L1 ANSWER 21 OF 178 CA COPYRIGHT 1995 ACS
TI 1,1'-Disubstituted ***Ferrocenes*** as Donors for

Charge-Transfer Complexes. Synthesis, Structure,

Conductivity, and

Magnetic Properties

AU Togni, Antonio; Hobi, Markus; Rihs, Gerty; Rist,

Guenther; Albinati,

Alberto; Zanello, Piero; Zech, Damian; Keller, Hugo

SO Organometallics (1994), 13(4), 1224-34

CODEN: ORGND7; ISSN: 0276-7333

LA English

GI Diagram(s) available in offline prints and/or printed CA

Issue.

AB Starting from ***ferrocene*** -1,1'-dicarbaldehyde, the

novel

electron donors 1,1'-bis[(5,6-dihydro-1,3-dithiolo[4,5-

b][1,4]dithiin-2-ylidene)methyl] ***ferrocene*** (I),

1,1'-bis[(1,3-benzodithiol-2-ylidene)methyl]
 ferrocene
 (II), and 1,1'-bis[2-[4-(methylthio)phenyl]-(E)-ethenyl]
 ferrocene (III) were prepd., and their electrochem.
 properties were studied. I and II undergo two reversible
 oxidn. processes, whereas for III, only the first electron removal is
 reversible in character. The crystal structure of I was detd.
 In the solid state, mols. of I assume an eclipsed
 conformation, with the two substituents lying on top of each other (intramol.
 stacking). I and II easily form 1:2 electron-transfer
 complexes with TCNQ, whereas III leads to a charge-transfer (CT)
 complex. Polycryst. samples of the electron-transfer complexes
 contg. I and II are conducting. SQUID magnetic susceptibility
 measurements of these electron-transfer complexes show these materials to
 undergo a phase transition dominated by a weak antiferromagnetic
 coupling (Curie-Weiss const., θ , -3 K in each case). The
 charge-transfer complex contg. III is an insulator and is
 characterized by a very weak degree of electron transfer.
 The crystal structure of the charge-transfer complex contg. III
 was detd. In the complex, the donor III assumes an
 antiperiplanar conformation, thus leading to a 1D-DADA type structure.

L1 ANSWER 25 OF 178 CA COPYRIGHT 1995 ACS
 TI Organometallic ferrocenyl polymers with variable,
 cooperative interaction between iron centers
 AU Foucher, Daniel A.; Honeyman, Charles H.; Nelson,
 James M.; Tang, Ben Zhong; Manners, Ian
 SO Angew. Chem. (1993), 105(12), 1843-5
 CODEN: ANCEAD; ISSN: 0044-8249
 LA German
 AB The redox properties of organometallic ferrocenyl
 polymers were examd. by means of cyclovoltammograms.
 Poly(ferrocenylsilanes), poly(ferrocenylgermanes), poly(ferrocenylstannanes), and
 poly(ferrocenylphosphanes) showed 2 reversible oxidn.
 potentials, while poly(ferrocenylethanes) showed only 1.

L1 ANSWER 29 OF 178 CA COPYRIGHT 1995 ACS
 TI High molecular weight poly(***ferrocenediyl***)
 -silanes): synthesis and electrochemistry of [-(C5H4)Fe(C5H4)SiR2-]
 n, R = Me, Et, n-Bu, n-Hex
 AU Nguyen, My T.; Diaz, A. F.; Dement'ev, Vyacheslav
 V.; Pannell, Keith H.
 SO Chem. Mater. (1993), 5(10), 1389-94
 CODEN: CMATEX; ISSN: 0897-4756
 LA English
 AB High-mol.-wt. poly(dialkylsilane-***ferrocenediyl***)
 of general formula [-(C5H4)Fe(C5H4)-SiR2-]n (R = Me, Et, Bu, and
 hexyl) were synthesized by thermal polymn. of the corresponding
 [1]-(dialkylsilyl)ferrocenophane. The polymers are stable
 to req. 450-500 degree. and with the smaller alkyl groups,
 e.g., Me and Bu, the polymers are predominantly cryst. in the solid
 state.

The voltammograms of these polymers in
 Et4NBF4/CH2Cl2 show 2 reversible redox peaks for the stepwise oxidn. of the
 polymer where half of the ***ferrocene*** centers on the polymer
 chain (possibly alternating) are oxidized in the first reaction and
 the remaining in the second reaction. Both oxidn. states of the
 polymers are stable to the electrochem. conditions. The

redox ***potentials*** of both reactions are
 affected by the size of the alkyl group. Although, these polymers are
 sol. in CH2Cl2, they deposit on the electrode surface and
 influence the shape of the voltammograms by affecting the diffusion of
 the electrolyte ions to the electrode. The polymers were chem.
 oxidized with anhyd. FeCl3. Two equiv. of FeCl3/(
 ferrocene) are required to fully oxidize the polymers.

L1 ANSWER 31 OF 178 CA COPYRIGHT 1995 ACS
 TI Redox behavior of ***ferrocene*** derivatives, 2.
 Bis(eta-5-tricyclo[5.2.1.0^{2,6}]deca-2,5,8-trien-6-yl)iron and
 related molecules
 AU Gallucci, Judith C.; Opronolla, Giuliana; Paquette, Leo
 A.; Pardi, Luca; Schirch, Paulo F. T.; Sivik, Mark R.; Zanello,
 Piero
 SO Inorg. Chem. (1993), 32(11), 2292-7
 CODEN: INOCAF; ISSN: 0020-1669
 LA English
 GI Diagram(s) available in offline prints and/or printed CA
 issue.
 AB The series of ***ferrocene*** -like derivs., e.g. I, II,
 in which the cyclopentadienyl rings are fused to bicyclic norbornane-
 or pinane-like fragments, has been studied electrochem. in
 order to test the ability of these derivs. to lose one electron as well
 as to quantify any stereoelectronic effects assocd. with
 coordination of the bicyclic moieties above or below the plane of the
 cyclopentadienyl rings. The X-ray structure of the cation
 bis(eta-5-tricyclo[5.2.1.0^{2,6}]deca-2,5,8-trien-6-yl)iron(III)
 (I+ as its TCNQ salt) has been detd., thus furnishing an
 evaluation of the stereochem. reorganizations accompanying one-electron
 removal from the corresponding neutral iron(II) congener (I). The
 EPR spectra of all the electrogenerated cations have been
 recorded at liq.-helium temp.

L1 ANSWER 32 OF 178 CA COPYRIGHT 1995 ACS
 TI Electrochemistry of chlorinated ***ferrocenes*** :
 stability of chlorinated ferrocenium ions
 AU Brown, Kylie N.; Golyas, Peter T.; Lay, Peter A.;
 McAlpine, Neale S.; Masters, Anthony F.; Phillips, Leonidas
 SO J. Chem. Soc., Dalton Trans. (1993), (6), 835-40
 CODEN: JCDTBI; ISSN: 0300-9246
 LA English
 AB The cyclic voltammograms of 1,2,3,4,5-pentachloro- and
 decachloroferrocene were studied in MeCN. The complexes
 undergo an irreversible 2-electron oxidn. consistent with an
 electrochem.-chem.-electrochem. mechanism at scan rates
 up to 10 V s⁻¹. However, at the faster scan rates (up to 160 V s⁻¹)
 available to electrodes of small radius and microelectrodes, chem.
 reversible 1-electron oxidns. to the chlorinated ferrocenium ions,
 [C10H10-xClxFe]+ are obtained under ambient conditions.
 The reversible [C10H10-xClxFe]+/0 couples when x = 10, 5, 2
 and 1 are obsd. at +1.246, +0.774, +0.215 and +0.168 V vs.
 ferrocenium/ferrocene, resp. A plot of E_f vs.
 SIGMA sigma.p (sigma.p = Hammett para coeff. for the chloro substituent) shows
 that the neutral mols. are stabilized with respect to the
 corresponding

ferrocenium cations by 0.16-0.12 V per Cl. The rate consts. of decompn. of the $[\text{Fe}(\text{eta-C5Cl5})_2]$ and $[\text{Fe}(\text{eta-C5Cl4})_2]^+$ cations were calcd. by both digital simulation and the method of Nicholson and Shain to be 40 $\pm$ 20 and 200 $\pm$ 50 s⁻¹, resp., at room temp. (approx. 20 degree.). $[\text{Fe}(\text{eta-C5H4Cl})_2]$ and $[\text{Fe}(\text{eta-C5H5})(\text{eta-C5Cl5})]$ exhibit reversible oxidns. at all scan rates down to 0.100 V s⁻¹ under the same conditions. Both $[\text{Fe}(\text{eta-C5Cl5})_2]$ and $[\text{Fe}(\text{eta-C5H5})(\text{eta-C5Cl5})]$ undergo irreversible 2-electron redns. at potentials neg. of -1.8 V, which lead to reductive dechlorination consistent with an electrochem.-chem.-electrochem.-chem. reaction.

L1 ANSWER 33 OF 178 CA COPYRIGHT 1995 ACS
TI Oxidation of 1,1-bis(methoxycarbonyl) ***ferrocene*** by hexakis(N,N-dimethylformamide)iron(III) perchlorate in acetonitrile
AU Jedlicka, Rudolf; Kirchner, Karl; Schmid, Roland
SO J. Chem. Soc., Dalton Trans. (1993), (3), 417-21
CODEN: JCDTBI; ISSN: 0300-9246
LA English
AB Kinetics of the outer-sphere oxidn. of 1,1'-bis(methoxycarbonyl) ***ferrocene***, $[\text{Fe}(\text{eta-5-C5H4CO}_2\text{Me})_2]$, by substitutionally labile Fe^{3+} introduced as $[\text{Fe}(\text{DMF})_6][\text{ClO}_4]_3$ (caution advised in handling potentially explosive perchlorate salts) in MeCN was measured at 25 degree. The reactive species are $[\text{Fe}(\text{DMF})_3(\text{MeCN})_3]^{3+}$ and $[\text{Fe}(\text{DMF})_4(\text{MeCN})_2]^{3+}$ produced in fast pre-equil. This reaction system is compared to that of the oxidn. of $[\text{Fe}(\text{tmphen})_3]^{2+}$ (tmphen = 3,4,7,8-tetramethyl-1,10-phenanthroline) by the same oxidant reported previously. Since $[\text{Fe}(\text{eta-5-C5H4CO}_2\text{Me})_2]$ and $[\text{Fe}(\text{tmphen})_3]^{2+}$ have nearly identical oxidn. potentials, reactivity differences between them arise mainly from the different charge types of 0/3+ and 2+/3+. The rate consts. for the reaction between $[\text{Fe}(\text{tmphen})_3]^{2+}$ and Fe^{3+} extrapolated to infinite ionic strength are about three times greater than the corresponding values for the $[\text{Fe}(\text{eta-5-C5H4CO}_2\text{Me})_2]$ - Fe^{3+} reaction. This small difference is attributable to slightly higher bond distortional barriers towards oxidn. of $[\text{Fe}(\text{eta-5-C5H4CO}_2\text{Me})_2]$ compared to $[\text{Fe}(\text{tmphen})_3]^{2+}$. An interesting effect of adding tetraethylammonium salts to the $[\text{Fe}(\text{eta-5-C5H4CO}_2\text{Me})_2]$ - Fe^{3+} reaction is obsd. The anions BF_4^- and CF_3SO_3^- slow down the reaction appreciably, whereas ClO_4^- and PF_6^- virtually do not affect the exptl. rate consts.

L1 ANSWER 44 OF 178 CA COPYRIGHT 1995 ACS
TI Solvent effect on the ***redox*** ***potential*** of ***ferrocene*** derivatives using an ultramicroelectrode
AU Zhong, Zhi Hong; Matsumura-Inoue, Takeko; Ichimura, Akio
SO Anal. Sci. (1992), 8(6), 877-9
CODEN: ANSCEN; ISSN: 0910-6340
LA English
AB The microelectrode voltammetric technique has revealed significant dependence of the substituent on the solvent effect for the half-wave oxidn. potential of ***ferrocene*** derivs. Half-wave potentials are given for 1,1',3,3'-tetra-tert-butylferrocene,

1,1'-dimethylferrocene, n-butylferrocene, N,N'-dimethylaminomethylferrocene, ***ferrocene***, (hydroxymethyl) ***ferrocene***, ***ferrocenecarboxylic*** acid, Me ***ferrocenecarboxylate***, ferrocenyl Me ketone ferrocenyl Ph ketone and ***ferrocenecarboxyaldehyde*** in MeCN contg. tetraethylammonium perchlorate using a Pt microdisk electrode.

L1 ANSWER 45 OF 178 CA COPYRIGHT 1995 ACS
TI Redox-active monomeric and polymeric surfactants
AU Anton, P.; Heinze, J.; Laschewsky, A.
SO Langmuir (1993), 9(1), 77-85
CODEN: LANGD5; ISSN: 0743-7463
LA English
AB A series of surfactant monomers and polymers bearing different redox-active moieties were synthesized. Soly., surface activity, aggregation behavior, and electrochem. properties of the compds. were investigated. Changes in the hydrophilic-hydrophobic balance were achieved by controlling the no. of charges on the surfactants via the redox moiety. Redox reactions of surfactants bearing N-alkylated nicotinic or (ferrocenylmethyl)ammonium structures were not reversible in water. However, other ***ferrocene*** and viologen surfactants showed good reversibility of the redox reactions, and drastic changes in their soly. were obsd. These surfactants are considered as promising systems to trigger reversible changes in self-organization.

L1 ANSWER 56 OF 178 CA COPYRIGHT 1995 ACS
TI ***Redox*** ***potential*** and substituent effects of ***ferrocene*** derivatives. Estimates of Hammett σ_p and Taft polar σ^* substituent constants
AU Silva, M. Emilia N. P. R. A.; Pombeiro, Armando J. L.; Frasto da Silva, Joao J. R.; Hermann, Rudolf; Deus, Norbert; Castilho, Tania J.; Silva, M. Fatima C. G.
SO J. Organomet. Chem. (1991), 421(1), 75-90
LA English
AB The anodic behavior of 34 ***ferrocene*** derivs. (8 of which have been prepd. for the first time) of the general type FcCH_2Y [$\text{Y} = \text{R}$ (hydrogen, alkyl or aryl), Fc or Fc^+ ($\text{Fc} = \text{ferrocenyl}$); $\text{Z} = \text{amino}$ or related functionalized groups, various unsatd. N-moieties (such as cyano, isocyano, imidazolyl, azide or triazene deriv.), alkylammonium, hydroxy, alkoxy, thiolate, acyloxy, phosphinyl or thiocarbonyl groups] has been studied by cyclic voltammetry (and, in some cases, also by controlled-potential electrolysis and differential pulse polarog.) at Pt electrode in an aprotic solvent. The compds. undergo a one-electron reversible or quasi-reversible oxidn. centered at each iron center and the effect of the substituents on the half-wave oxidn. potential is discussed in terms of their electronic properties. Linear correlations have been recognized between this potential and the Hammett σ_p const. or the Taft polar σ^* const. for the substituent, and have been used, in the cases they were not known, to est. the values of these consts. for the above-mentioned substituents and of the latter const. for a total of 73 of these substituents or their Z groups.

The anomalous behaviors of complexes with a hydroxy, a carbonyl, an acylamido, a thiocarbonyl, or a phosphinyl group are discussed.

L1 ANSWER 61 OF 178 CA COPYRIGHT 1995 ACS

TI Substituent effects in multiply trimethylsilyl-substituted
ferrocenes. Molecular structure of 1,1',2,2',4,4'-
hexakis(trimethylsilyl)ferrocenium tetrafluoroborate
AU Okada, Jun; Albach, Rolf W.; Herdtweck, Eberhard;
Wagner, Friedrich

SO Polyhedron (1991), 10(15), 1741-8

CODEN: PLYHDE; ISSN: 0277-5387

LA English

AB Cyclic voltammograms and electronic and Moessbauer spectra were

recorded for a series of sterically hindered
ferrocenes

bearing trimethylsilyl and tert-Bu groups $\text{Fe}[\eta\text{-}5\text{-C}_5\text{H}_3(\text{SiMe}_3)_2]$

1,3]2, $\text{Fe}[\eta\text{-}5\text{-C}_5\text{H}_2(\text{SiMe}_3)(\text{SiMe}_3)_2\text{-}4,1,2]_2$ (E = C, Si),

and $\text{Fe}[\eta\text{-}5\text{-C}_5\text{H}_2(\text{SiMe}_3)_3\text{-}1,2,4](\eta\text{-}5\text{-C}_5\text{R}_5)$ (R = H,

Me). The ***redox*** ***potential*** of $\text{Fe}[\eta\text{-}5\text{-C}_5\text{H}_2(\text{SiMe}_3)_3\text{-}1,2,4]_2$

is more neg. than is expected for the trimethylsilyl group's

electron-withdrawing property, which is confirmed by the

value of the lowest wavenumber electronic absorption and of the

quadrupole splitting. Oxidn. of $\text{Fe}[\eta\text{-}5\text{-C}_5\text{H}_2(\text{SiMe}_3)_3\text{-}1,2,4]_2$ with

AgBF_4 gives $[\text{Fe}[\eta\text{-}5\text{-C}_5\text{H}_2(\text{SiMe}_3)_3\text{-}1,2,4]_2\text{BF}_4]$. A single

crystal x-ray structural anal. shows that the cation adopts a

conformation with a pair of trimethylsilyl groups eclipsed.

L1 ANSWER 65 OF 178 CA COPYRIGHT 1995 ACS

TI Di- to tetranuclear rigid silyl-bridged ***ferrocenes***

Synthesis, cyclic voltammetry, and chemical oxidation

AU Atzker, H.; Hiermeier, J.; Koehler, F. H.; Steck, A.

SO J. Organomet. Chem. (1991), 408(3), 281-96

CODEN: JORCAI; ISSN: 0022-328X

LA German

AB The reaction of 4,4,8,8-tetramethyltetrahydro-4,8-disila-5-

indacenediyl dianion (L) and cyclopentadienyl anion (Cp)

with solvated FeCl_2 gave the bridged dinuclear

ferrocenes anti-

and syn-CpFeLFeCp (I), the trinuclear ***ferrocenes***

anti,anti- and anti,syn-CpFeLFeCp (II), and the tetranuclear

ferrocenes anti,anti,anti- and anti,syn,anti-

CpFeLFeLFeCp

(III) together with 4 ***ferrocene*** -type side products

which were partly unknown before. The mols. were characterized

by mass spectrometry and ^1H , ^{13}C , and ^{29}Si NMR including

stereochem. details. The anti/syn-isomer ratio did not change

significantly with temp. and showed that the anti-arrangement is

preferred. I-III and CpFe(C₅H₄SiMe₂C₅H₄)FeCp gave cyclic

voltammograms (CV) which proved that all ***ferrocene*** units could be oxidized

as reversibly as ***ferrocene*** itself. The resoln. of the

CV waves was better in propionitrile than in THF and changed

with temp. The ***redox*** ***potentials*** were mainly

influenced by the substitution of the ***ferrocene*** units and by

their distance from each other. By proper choice of the bridges

one can predet. whether a mol. with 3 or more ***ferrocene***

units is 1st oxidized in the center or the periphery. Internol.

electron

transfer was obsd. in THF at higher concns. Reaction of I

with HBF_4 gave $[\text{FMe}_2\text{Si}(\text{Cp})_2\text{Fe}]$ among others, whereas with I2 an

oligodide of I+, and with $\text{AgPF}_6 \cdot 2\text{MeCN}$ paramagnetic

$[\text{PF}_6]$ was obtained. The latter gave ^{29}Si , ^{13}C , and ^1H spectra showing

electron exchange between ***ferrocene*** and ferricenium units.

L1 ANSWER 66 OF 178 CA COPYRIGHT 1995 ACS

TI Solid-state redox diode composed of an electropolymerized

metallocene layer and a polymer electrolyte layer

containing a redox couple in a mixed-valent state

AU Nishihara, Hiroshi; Asai, Harumi; Aramaki, Kunitsugu

SO J. Chem. Soc., Faraday Trans. (1991), 87(11), 1771-7

CODEN: JCFTEV; ISSN: 0956-5000

LA English

AB Redox bilayer devices, $\text{SnO}_2/\text{poly-Cc+}/\text{PEO-Li+}$, $\text{Fc+}/\text{O}/\text{SnO}_2$,

$\text{SnO}_2/\text{poly-Cc+}/\text{PEO-Li+}$, DDQO/SnO_2 , $\text{SnO}_2/\text{poly-Cc+}/\text{PEO-Li+}$, $\text{TCNQO}/\text{SnO}_2$

and $\text{SnO}_2/\text{poly-Fc}/\text{PEO-Li+}$, $\text{TCNQO}/\text{SnO}_2$ were

constructed and their i vs. ΔE characteristics investigated. Poly-Cc+,

poly-Fc and PEO represent polymers formed by electrochem. redn. of

1,1'-bis(1-chloro-2-formylvinyl)cobaltocenium salt and

1,1'-bis(chloromethyl)***ferrocene***, and cross-linked

poly(ethylene oxide), resp. All the devices show diode-like

i vs. ΔE characteristics, which relate to the difference in

redox ***potentials*** between the two

layers. ΔE_{EO} . The i vs. ΔE curves obtained can be

analyzed by a simple model assuming that the diffusion-controlled

electron transfer at the interface of the layers and/or the charge

diffusion in the polymer electrolyte layer limit the electron

conduction rate.

L1 ANSWER 84 OF 178 CA COPYRIGHT 1995 ACS

TI ***Redox*** ***potential*** - Hammett's sigma,

or Taft's sigma,* constant relationships at ***ferrocene***

derivatives

AU Rodrigues, M. Emilia N. P.; Pombeiro, Armando J. L.;

Herrmann, Rudolf

SO Portug. Electrochim. Acta (1989), 7(March), 107-12

CODEN: PEACEZ

LA English

AB The ***redox*** ***potentials*** of a variety of

ferrocene derivs. were measured by cyclic

voltammetry and correlated linearly with the Hammett sigma.p or the Taft

polar sigma,* const. of the substituent; the latter correlation

was recognized for the sp³-C ligating substituents.

L1 ANSWER 91 OF 178 CA COPYRIGHT 1995 ACS

TI Carborane-stabilized M(III) complexes of mononuclear and

dinuclear arene complexes (M = iron, ruthenium)

AU Merker, Jon M.; Geiger, William E.; Davis, James H.,

Jr.; Atwood, Martin D.; Grimes, Russell N.

SO Organometallics (1989), 8(6), 1580-1

CODEN: ORGND7; ISSN: 0276-7333

LA English

AB The complexes $(\eta\text{-}6\text{-C}_6\text{H}_6)\text{M}(\text{Et}_2\text{C}_2\text{B}_4\text{H}_4)$, where M = Fe or Ru, undergo

reversible 1-electron oxidn. to the corresponding M(III)

monocations, as detd. by cyclic voltammetry

measurements. The E.degree. values are +0.20 V and +0.80 V vs. $\text{Cp}_2\text{Fe}^0/+$

for the Fe and Ru complexes, resp. A bis(ferracarborane) complex of

biphenyl shows 2 reversible oxidns. at E.degree. values of +0.55 and +0.84

V. All

measurements were done in CH_2Cl_2 with 0.1 M Bu_4NPF_6 as supporting electrolyte. The 1-electron nature of the oxidn. was confirmed by comparison of the voltammetric peak heights to that of $^{+}\text{ferrocene}^{+}$, and by exhaustive coulometry of the monocation complex. This is believed to be the 1st evidence for the reversible oxidn. of Fe(II) or Ru(II) arene complexes.

L1 ANSWER 93 OF 178 CA COPYRIGHT 1995 ACS
TI Electrochemical response of poly(1,1'-ferrocenylene)-modified electrode

AU Oyama, Noboru; Takizawa, Yumiko; Matsuda, Hiroaki; Yamamoto, Takakazu; Sanechika, Kenichi

SO Denki Kagaku oyobi Kogyo Butsuri Kagaku (1988), 36(9), 781-2

CODEN: DKOKAZ; ISSN: 0366-9297

LA English

AB Electrodes modified with poly(1,1'-ferrocenylene) (I) were prep'd. by either electrodeposition on a Au or Pt electrode from a soln. of CH_2Cl_2 contg. Bu_4NClO_4 and sat'd. with I or by coating I dispersed in poly(vinylidene fluoride) in CH_2Cl_2 on graphite and drying. Cyclic voltammograms are given for I at a Au electrode in CH_2Cl_2 and for I-modified electrode prep'd. by electrodeposition on Pt. The $^{+}\text{ferrocene}^{+}$ $^{+}\text{potentials}^{+}$ are compared for the I-modified electrode and a poly(vinylferrocene)-modified electrode.

The coating of I on graphite was often released in dry solvents but the I-modified electrode was stable in aq. soln. contg. NaClO_4 and showed cyclic voltammetric behavior similar to the electrodeposited electrode.

L1 ANSWER 115 OF 178 CA COPYRIGHT 1995 ACS
TI Potentiometric and amperometric titration of $^{+}\text{ferrocene}^{+}$ by cerium(IV)

AU Solomatina, V. T.; Balusov, V. A.; Makarov, N. V.; Ermolaeva, T. N.

SO Izv. Vyssh. Uchebn. Zaved., Khim. Khim. Tekhnol. (1985), 28(5), 47-51

CODEN: IVUKAR; ISSN: 0579-2991

LA Russian

AB $^{+}\text{Ferrocene}^{+}$ was det'd. by amperometric titm. by using Pt or glassy C indicator electrodes or by potentiometric titm. involving the use of Pt indicator electrodes. The $^{+}\text{redox}^{+}$ $^{+}\text{potential}^{+}$ of the $^{+}\text{ferrocene}^{+}$ /ferricenium couple $[(\text{C}_5\text{H}_5)_2\text{Fe}/(\text{C}_5\text{H}_5)_2\text{Fe}^{+}]$ is a function of aq.-org. solvent compn. The optimum solvents for the cerimetric titm. are 0.5 mol H_2SO_4 /1:1 $\text{H}_2\text{O}-\text{HOAc}$ or 1:2 $\text{H}_2\text{O}-\text{Me}_2\text{CO}$. The selectivity of the method was tested. It is suitable for anal. of macromol. compns. and detg. $^{+}\text{ferrocene}^{+}$ in samples contg. 10-30-fold excess of 1,1'-diacetylferrocene.

L1 ANSWER 126 OF 178 CA COPYRIGHT 1995 ACS
TI Study of a ferrocene-ferricenium electrode by the method of polarization measurements in aqueous-organic solvents

AU Khachatryan, O. B.; Khomutov, N. E.; Khachatryan, T. A.

SO Zh. Fiz. Khim. (1984), 58(3), 640-5

CODEN: ZFKHA9; ISSN: 0044-4537

LA Russian

AB The electrode potentials were measured of a $^{+}\text{ferrocene}^{+}$ -ferricenium (ferricenium) electrode in aq.-org. solvents contg. HCl at different ratios of $^{+}\text{ferrocene}^{+}$ and ferricenium picrate.

The formal potentials weakly depend on the nature of the solvent. The kinetics were studied of anodic and cathodic processes in the $^{+}\text{ferrocene}^{+}$ -ferricenium system, accompanied by concn. and small electrochem. polarization depending upon the nature of the solvent (MeOH , EtOH , PrOH , acetone, MeCN , pyridine and H_2O).

L1 ANSWER 139 OF 178 CA COPYRIGHT 1995 ACS
TI Bridged $^{+}\text{ferrocenes}^{+}$. VIII. Correlation of $^{+}\text{redox}^{+}$ $^{+}\text{potentials}^{+}$ with structure

AU Fujita, Etsuko; Gordon, Barry; Hillman, Manny; Nagy, Agnes G.

SO J. Organomet. Chem. (1981), 218(1), 105-14

CODEN: JORCAI; ISSN: 0022-328X

LA English

AB The $^{+}\text{redox}^{+}$ $^{+}\text{potentials}^{+}$ for oxidn. of $^{+}\text{ferrocenes}^{+}$ with hydrocarbon bridges and of corresponding ketoferricenium were measured. For the reduced compds., correlations were obs'd. between the potentials and the iron-to-ring distances. For the ketoferricenium, the importance of proper alignment of the carbonyl with the cyclopentadienyl rings is noted. Other possible relationships are discussed.

L1 ANSWER 160 OF 178 CA COPYRIGHT 1995 ACS
TI Amperometric titration of rhenium(VII) by $^{+}\text{ferrocene}^{+}$ in the presence of molybdenum(VI) and tungsten(VI)

AU Rzhavichev, S. P.; Kaplan, B. Ya.; Solomatina, V. T.

SO Zavod. Lab. (1978), 44(1), 4-7

CODEN: ZVDLAU; ISSN: 0044-1910

LA Russian

AB The $^{+}\text{redox}^{+}$ $^{+}\text{potentials}^{+}$ for $\text{Re(VII)}/\text{Re(V)}$, E_1 ; $\text{Mo(VI)}/\text{Mo(V)}$, E_2 ; and ferricenium/ $^{+}\text{ferrocene}^{+}$, E_3 , were studied in acidic aq.-org. media in order to det. Re(VII) in the presence of Mo(VI) and W(VI) by amperometric titm. The most suitable medium for titm. with 0.01M $^{+}\text{ferrocene}^{+}$ was MeCN contg. 2-4% H_2O and 1N H_2SO_4 ; the redox p.d. were E_1-E_3 430 and E_2-E_3 70 mV, resp. A C-glass electrode and a C.ref. electrode dipped into an electrolyte contg. KMnO_4 in 1N NaOH were used to det. 0.1-1 mg Re in $\text{Re}-\text{Mo}-\text{W}$ alloys. Large excess W and 20-fold Mo did not interfere.

L1 ANSWER 162 OF 178 CA COPYRIGHT 1995 ACS
TI $^{+}\text{Redox}^{+}$ $^{+}\text{potentials}^{+}$ of the ferricenium/ $^{+}\text{ferrocene}^{+}$ system in acid organic-aqueous media

AU Solomatina, V. T.; Rzhavichev, S. P.; Artemova, T. N.

SO Zh. Anal. Khim. (1977), 32(6), 1077-82

CODEN: ZAKHAS

LA Russian

AB The formal potentials of the title system ($\text{Fec}^{+}/\text{Fec}$) in some acidic aq.-org. media and of the system $\text{Fe(III)}/\text{Fe(II)}$ in sulfate aq.- MeCN solns. were studied. The formal potentials of the $\text{Fec}^{+}/\text{Fec}$ system can be varied between +0.1 and +0.66 V by changing the concns. of the inorg. acids (HCl , H_2SO_4 , and HClO_4) and the org. solvent (HOAc , MeCN , Me_2CO , alc., DMF , Me_2SO) contents in the org.-aq. solns. The potentials are changed due to different solvating power of the solvents, complex formation of Fec^{+} cation and formation of the protonated $^{+}\text{ferrocene}^{+}$ form (FecH^{+}) in acid solns. The extent of the formation of this form also depends significantly on the donor-acceptor properties of the org. solvents.

L1 ANSWER 164 OF 178 CA COPYRIGHT 1995 ACS
TI Redox potentials $^{+}\text{of the iron(III)-iron(II)}$ system in some aqueous-organic media and potentiometric determination of iron in alloys using ferrocene

AU Solomatina, V. T.; Artemova, T. N.; Rzhavichev, S. P.

SO Novye Metody Isspyt. Metallov (1977), (4), 47-53

From: Ref. Zh., Metall., 1977, Abstr. No. 6K12

LA Russian AB Title only translated.

[end of search]

Fe(Cp)₂ Ion Exchange 6/28/95

=> s ferrocen?

L1 9698 FERROCEN?

=> s Il and ion(w)exchang?

566996 ION
142962 EXCHANG?L2 88025 ION(W)EXCHANG?
25 L1 AND ION(W)EXCHANG?

=> d I2 bib,abs

L2 ANSWER 1 OF 25 CA COPYRIGHT 1995 ACS

TI Possible analytical application of laponite clay modified electrodes

AU Labbe, Pierre; Brahimi, Brahim; Reverdy, Gilbert; Mousty, Christine;

Blankespoor, Ronald; Gautier, Arnaud; Degrand, Chantal

SO J. Electroanal. Chem. (1994), 379(1-2), 103-10

CODEN: JECHES; ISSN: 0368-1874

LA English

AB Laponite clay modified electrodes (LCME) were used to detect trace

amts. of neutral or cationic organometallic substances, including

ferrocene (Fc) and cobaltocenium (Co+), two mols. covalently

attached to cobaltocenium, and a mol. labeled by ***ferrocene***

(N-amphtaminocarbonylferrocene) as an electroactive org. test

species. During an ***ion*** - ***exchange***

preconcn. step, the cationic species (cobaltocenium derivs.) are collected in the

laponite film from their dil. solns. under open-circuit

conditions whereas the procationic species (***ferrocene***

derivs.) are collected in their cationic form by applying a pos. potential.

Quantification of the surface bound cations is then carried out by

applying a neg. scan using voltammetry or square wave

voltammetry. In the case of the two mols. labeled by Co+, a detection

limit of 4 times. 10-8 mol L-1 and a linear calibration range from 1

times. 10-7 to 2 times. 10-5 mol L-1 were obtained reproducibly

by using a new LCME for each measurement. Conversely with small

redox mols. such as ***ferrocene*** and cobaltocenium, the same

LCME can be used repeatedly because applying a neg. potential leads to the

exclusion of the resulting neutral mol. which can be rinsed

efficiently from the film.

=> d I2 2-25 bib,abs

L2 ANSWER 2 OF 25 CA COPYRIGHT 1995 ACS

TI Synthesis and structure of ferricenium perchlorate

AU Baturin, N. A.; Grigor'ev, M. S.; Kryuchkov, S. V.; Maksimov, V. G.

SO Koord. Khim. (1994), 20(8-9), 671-3

CODEN: KOKHDC; ISSN: 0132-344X

LA Russian

AB ***ion*** - ***exchange*** of hydroxonium ions

for ferricenium cations of HTcO4 in H2O with powd. ***ferrocene***

gave title compd. [Cp2Fe][TcO4]. The structure of the product was

dtd. by x-ray crystallog.: space group P3121, Z = 3, a = 8.967(3),

c = 12.464(7) ANG..

L2 ANSWER 3 OF 25 CA COPYRIGHT 1995 ACS

TI Choline sensing carbon paste electrode based on

ferrocene

and modified enzyme

AU Yabuki, Soichi; Mizutani, Fumio; Katsura, Tatsuo

SO Proc. - Electrochem. Soc. (1993), 93-7(Proceedings of

the Symposium on Chemical Sensors II, 1993), 394-9

CODEN: PESODO; ISSN: 0161-6374

LA English

AB Polyethylene glycol-modified choline oxidase (PEG-

ChOD) was prepd. for the construction of a choline-sensing carbon paste

electrode. The modified ChOD exhibits higher enzyme activity on

the electrode surface than the case of a carbon paste/unmodified ChOD-

system. Current response to choline with the carbon paste/PEG-

ChOD electrode was larger than in the electrode where unmodified ChOD

was in high concn. (5 mM) of choline. This shows the effectiveness of

enzyme modification with PEG for usage of a carbon paste

electrode. Coating of the enzyme electrode by an ***ion***

exchange polymer (Kodak AQ29D) was effective for enhancing the

current response to choline, owing to the enrichment of cationic

analyte in the anionic polymer overcoat.

L2 ANSWER 4 OF 25 CA COPYRIGHT 1995 ACS

TI Enzyme electrodes based on ionomer films coated on

electrodes

AU Harkness, Janet K.; Murphy, Oliver J.; Hitchens, G.

Duncan

SO J. Electroanal. Chem. (1993), 357(1-2), 261-72

CODEN: JECHES; ISSN: 0368-1874

LA English

AB Expts. are described showing the feasibility of elec.

communication between the enzyme glucose oxidase and a

ferrocene redox mediator when both are incorporated into a Nafion

perfluorosulfonic acid cation-exchange polymer film coated on an electrode.

Nafion films can serve as a stable immobilization matrix that is

compatible with the conditions required for an enzyme catalyst to

function. An exptl. strategy for the incorporation of a redox mediator and

the enzyme into the ***ion*** - ***exchange***

polymer film is described. This involved casting mixed solns. of enzyme +

mediator and Nafion onto an electrode surface. The

ferrocene mediator was chem. modified so that it was strongly

retained inside Nafion through hydrophobic interactions. In the presence

of glucose, the mediator was able to transfer electrons from the

redox center of the film-entrapped glucose oxidase to the

electrode. Slow rates of charge transfer between the enzyme and the

electrode, because of the high affinity of the modified mediator for the

polymer, is a difficulty with this method at present. An

extension of the concepts demonstrated in this paper could lead to

practical enzyme electrodes for anal. purposes.

L2 ANSWER 5 OF 25 CA COPYRIGHT 1995 ACS

TI Chiral catalysts, catalytic oxidation and disproportionation

reactions, and methods of producing epoxycyclohexanes and

taxol

IN Jacobsen, Eric N.; Zhang, Wei; Deng, Li

PA Research Corp. Technologies, Inc., USA

SO PCT Int. Appl., 162 pp.

CODEN: PDXD2

PI WO 9303838 A1 930304

AI WO 92-057261 920826

PRAI US 91-749460 910826

US 91-809446 911216

DT Patent

LA English

AB Chiral salen based catalysts [I; M = transition metal (e.g., Mn), A

= anion, n = 0-2; X1 or X2 are silyl, aryl, sec- or tert-alkyl; at

least 1 of X3 or X4 is selected from this same group; Y1, Y2, Y3,

Y4, Y5, and Y6 are independently H, halo, alkyl, aryl, silyl, and

halo- or alkoxyalkyl; at least 1 of R1, R2, R3, R4 is selected from

a 1st group consisting of H, Me, Et, and primary alkyl; if R1 is

selected from this group then R2 and R3 are selected from a 2nd

group consisting of aryl, heteroatom bearing aryl, sec- or tert-alkyl; if R2 is selected from the 1st group, then R1

and R4 are selected from the 2nd group; if R3 is selected from the 1st

group, then R1 and R4 are selected from the 2nd group; if R4 is selected

from the 1st group, then R2 and R3 are selected from the 2nd group]

for the enantioselective epoxidn. of prochiral alkenes or for the

enantioselective oxidn. of prochiral sulfides are described. The

prepn. of the most preferred ligand II and catalyst II.Mn(III)Cl

(III) is described. A chromene deriv. is enantioselectively

epoxidized using I and an O atom source [e.g., aq. NaOCl/NaOH,

iodosylmesitylene, NaIO4, Bu4NIO4, K2S(OO)O3, Mg monoperoxyphthalate, Fe(III)(CN)6³⁻, etc.]; the

enantioselectivity with I is particularly good with cis-alkenes. I also

catalyzes the disproportionation of H2O2. Thus, PhC.tplbond.CCO2Et

is hydrogenated in quinoline over Pd/CaCO3 to give 95% cis-PhCH=CHCO2Et

which with (R,R)-III, 4-phenylpyridine N-oxide in CH2Cl2 is

epoxidized with buffered aq. NaOCl in a 2 phase system to give 60%

(ee 96-7%) cis-(2R,3R)-Et 3-phenylglycidate (IV) and 15% (ee 78%)

trans-Et 3-phenylglycidate. IV was treated with NH3/EtOH to give

71% (2R,3S)-3-phenylisoserinamide, sapond. with aq. Ba(OH)2 to give

74% (2R,3S)-3-phenylisoserine which was N-benzoylated (70%) and

hydroxy group protected by O-alkylation with EtOCHClMe to give

optically pure (2R,3S)-N-benzoyl-O-(1-ethoxyethyl)-3-phenylisoserine

which with 7-triethylsilylbaccatin III (DMAP/DPC in PhMe) gives,

after deprotection with HCl/ aq. EtOH, taxol (V).

L2 ANSWER 6 OF 25 CA COPYRIGHT 1995 ACS

TI Simultaneous cyclic voltammetry and electrochemical quartz-crystal

microbalance study at polymer film-modified electrodes of molecular

inclusion of ***ferrocene*** by .beta.-cyclodextrin polymer and

carboxymethylated .beta.-cyclodextrin polymer as well as ***ferrocenecarboxylic*** acid by .beta.-cyclodextrin

polymer

AU Kumer, Wlodzimierz; Dohlhofer, Karl

SO J. Electroanal. Chem. (1992), 326(1-2), 139-60

CODEN: JECHES

LA English

AB The mol. inclusion equil. accompanying the ***ferrocene***

electrode charge transfer, FC/FC+, in host films of condensation

polymers of .beta.-cyclodextrin (.beta.-CDP) and of carboxymethylated cyclodextrin (.beta.-CDPA) were

investigated. The inclusion equil. which accompanied the ***ferrocenecarboxylic***

acid electrode processes, FCAH(0)/FCA(I) and FCA(0)/FCA(I), in the

beta.-CDP film host were also studied. Simultaneous cyclic

voltammetry (CV) and electrochem. quartz-crystal microbalance (EQCM)

expts. were performed for the relevant inclusion and redox systems

by means of the polymer film-modified Au/quartz electrodes. The

effects of the electrostatic charge of the guest species, controlled

by means of the electrode potential and/or by adjusting the pH of

the soln., i.e. the pH and/or redox switching, as well as the effect

of counter-ions were investigated for the selective guest ingress

and egress. The FC+ electrooxidn. product of FC is partially

released from the .beta.-CDP film and is fairly well retained in the

beta.-CDPA one, provided that the fixed cation-exchange carboxylic

sites are accessible for ***ion*** ***exchange***

Acid-base turn. of the CDPA film with the use of EQCM as sensor

yielded the acid dissoci. const. of the pendant carboxymethyl

groups, pKa(.beta.-CDPA) = 4.15. The FCA(I) oxidn. product of FCAH

is partially released from the .beta.-CDP film at pH < pKa(.beta.-CDP/FCAH), and it ppts. inside the film at pH

> pKa(.beta.-CDP/FCAH). The acid dissoci. const. of FCAH in the

beta.-CDP film, detd. by the EQCM sensor, was pKa(.beta.-CDP/FCAH)

= 3.9.

L2 ANSWER 7 OF 25 CA COPYRIGHT 1995 ACS

TI Spectroscopic evidence for the formation of a bridged lithium

dicyclopentadienyl lithiate complex

AU Ehemann, M.; Hafner, J.

SO J. Am. Chem. Soc. (1992), 114(1), 135-40

CODEN: JACSAT; ISSN: 0002-7863

LA English

AB One- and two-dimensional NMR and DNMR studies including 6Li NMR

prove the formation of a ***ferrocene*** -bridged lithium

bis(vinylcyclopentadienyl)lithiate complex (I) in THF. Two

different dynamic processes could be detected: the exchange of the

ate-bound Li ion with the solvent-sepd. Li species and the intramol.

rotation of the hydrocarbon decks, involving the cleavage of the ate

complex in the transition state. From the activation parameters of

both processes derived from NMR line shape simulation it is shown

that the lithium ***ion*** ***exchange*** process should

proceed without the loss of the chelate conformation.

L2 ANSWER 8 OF 25 CA COPYRIGHT 1995 ACS

TI Photochemical behavior of metal complexes intercalated in zirconium

phosphate

AU Rosenthal, G. L.; Caruso, J.

SO J. Solid State Chem. (1991), 93(1), 128-33

CODEN: JSSCBI; ISSN: 0022-4596

LA English

AB Intercalation compds. of alpha.-Zr(HPO4)2.cntdot.H2O (alpha.-ZrP)

with $\text{Cr}(\text{NH}_3)_6^{3+}$, $\text{Cr}(\text{en})_3^{3+}$, $\text{Co}(\text{NH}_3)_6^{3+}$, $\text{Co}(\text{en})_3^{3+}$, and $\text{Fe}(\text{C}_5\text{H}_5)_2^+$ were prep'd. by an ***ion*** ***exchange*** with $(\text{BuNH}_3)_2\text{Zr}(\text{PO}_4)_2$. X-ray powder diffraction was used to det. interlayer spacings. Irradn. of intercalated $\text{Cr}(\text{en})_3^{3+}$ with a Hg vapor lamp ($\lambda_{\text{max}} = 254 \text{ nm}$) resulted in a red shift of the ligand field absorption max. from 457 to 560 nm, suggesting loss of all coordinated ethylenediamine and substitution by lattice H_2O and PO_4^{3-} . Irradn. of $\text{Cr}(\text{NH}_3)_6^{3+}$ results in a smaller red shift, suggesting kinetic stabilization of the ammine complex by inclusion in the phosphate host. The Fe and Co complexes do not react under similar photolysis conditions, in contrast to their behavior in aq. soln., where reduced complexes result. The potential for use of host lattices in stabilization of unstable species is discussed.

L2 ANSWER 9 OF 25 CA COPYRIGHT 1995 ACS

TI Voltammetry in supercritical carbon dioxide at platinum microdisk electrodes coated with perfluorinated ***ion*** - ***exchange*** membranes

AU Michael, Adrian C.; Wightman, R. Mark
SO Anal. Chem. (1989), 61(19), 2193-200
CODEN: ANCHAM; ISSN: 0003-2700

LA English
AB A film of ionically conducting polymer, Nafion, was placed over an electrochem. probe consisting of both a microdisk working electrode and a quasi-ref. electrode. Undistorted voltammograms of ***ferrocene***, 4-methylcatechol and 3,4-dihydroxybenzylamine dissolved in supercrit. CO_2 in the presence of small quantities of H_2O were obtained without the use of added supporting electrolyte. Expts. carried out in a supercrit. fluid flow stream demonstrated the potential utility of membrane-coated microelectrodes as chromatog. detectors.

L2 ANSWER 10 OF 25 CA COPYRIGHT 1995 ACS

TI Stability of ferricinium and its cytostatic effect
AU Wenzel, M.; Wu, Y.; Liss, E.; Neuse, E. W.
SO Z. Naturforsch., C: Biosci. (1988), 43(11-12), 963-6
CODEN: ZNCBDA; ISSN: 0341-0382

LA German
AB The relative stabilities of different ferricinium cations were studied in buffer or serum-contg. soln. and in vivo and compared with their cytostatic effects in cultures of Yoshida ascites tumor cells. Although the ferricinium cation itself was the most unstable cation compared with the dimethyl-ferricinium cation and the deuterated ferricinium derivs. it showed the highest cytostatic effect.

L2 ANSWER 11 OF 25 CA COPYRIGHT 1995 ACS

TI Intrazeolite metallocenes: chemistry, spectroscopy, and dynamics
AU Ozin, Geoffrey A.; Godber, John
SO J. Phys. Chem. (1989), 93(2), 878-93
CODEN: JPCHAX; ISSN: 0022-3654

LA English
AB Optical, vibrational, and paramagnetic resonance spectroscopic studies have been conducted on Cp_2M ($\text{M} = \text{Cr}, \text{Fe}, \text{Co}$; $\text{Cp} = \text{cyclopentadienyl}$) and some of their ring substituted derivs.,

impregnated by soln. - and gas-phase techniques into a range of ***ion*** - ***exchanged*** Y and A zeolites, including the Brønsted acid form of Y zeolite. The intrazeolite chem., spectroscopy, and dynamics of $\text{Cp}_2\text{M}/\text{Cp}_2\text{M}^+$ redox pairs are studied.

Key points relate to the following: (1) kinetics of intrazeolite impregnation/diffusion of Cp_2M , (2) internal vs. external confinement of $\text{Cp}_2\text{M}/\text{Cp}_2\text{M}^+$ guests, (3) spatially resolved intrazeolite redox titrs. and the homogeneity of a $\text{Cp}_2\text{M}/\text{Cp}_2\text{M}^+$ impregnation into the zeolite crystals, (4) intrazeolite redox chem. in HnDmNaS6-n-m-Y isotopically labeled zeolites, (5) alpha-cage Brønsted acid site-specific electron-transfer processes and redox-induced H-atom/lattice OH produ. of H_2O , with concurrent produ. of Cp_2M^+ with Al.bul. and Si.bul. framework radical centers (the ratio of the latter being dependent on the concn. of Brønsted acid sites), and (6) for orbitally degenerate ground-state Cp_2Cr and Cp_2Fe^+ , the intrazeolite anchoring site, g-tensor anisotropy, DELTA.g, low symmetry distortion parameter .delta., and cage dynamics are extremely sensitive to the level of ***ion*** - ***exchange***, co-cation types, and temp. This is contrasted with orbitally nondegenerate intrazeolite Cp_2Cr^+ , whose magnetic parameters are rather insensitive to the host matrix. Controlled O_2 oxidn. of intrazeolite $\text{Cp}_2\text{Cr}/\text{Na-Y}$ leads to spatially sepd. and charge-sepd. cation/anion pairs, $\text{Cp}_2\text{Cr}^+/\text{O}_2^-$. Anal. of the hyperfine tensors for framework Al.bul. radical centers in $\text{Cp}_2\text{M}/\text{HnDmNaS6-n-m-Y}$ zeolites leads to a hybridization ratio of $\text{sp}^{2.06-2.09}$ and an almost triangular planar configuration of oxygens about the Al in the AlO_3 site with $\nu_{\text{phi}} = 119^\circ$.

L2 ANSWER 12 OF 25 CA COPYRIGHT 1995 ACS

TI Studies on steroids. CCXXIX. Separation and characterization of catechol estrogen glucuronides in urine of pregnant women by high-performance liquid chromatography
AU Shimada, Kazutake; Xie, Fuming; Niwa, Toshifumi; Wakasawa, Tatsuyoshi; Nambu, Toshio
SO J. Chromatogr. (1987), 400, 215-21
CODEN: JOCRAM; ISSN: 0021-9673

LA English
AB The sepn. and characterization of catechol estrogen glucuronides in the urine of pregnant women by HPLC with electrochem. detection is described. The urine samples from pregnant women were passed through Amberlite XAD-2 and Sep-Pak C18 columns and subsequently to ***ion*** - ***exchange*** chromatog. on piperidinobenzoyl Sephadex LH-20 to isolate the estrogen glucuronide fraction. The subsequent resolu. into individual estrogen glucuronides was achieved by HPLC on a reversed-phase column. 2-Hydroxyestrone 2-glucuronide and 4-hydroxyestrone 4-glucuronide were identified on the basis of their behavior on HPLC with 3 different mobile phases. Derivatization of 2 glucuronides with 2-***ferrocenylethylamine***

followed by chromatog. sepn. and measurement of hydrodynamic voltammograms with an electrochem. detector was carried out for unequivocal identification. Enzymic cleavage of the glucuronoside linkage followed by the identification of deconjugated catechol estrogens by HPLC with electrochem. detection further supported the structural assignment of these metabolites. The ratio between the amts. of 2-hydroxysterone 2-glucuronide and 4-hydroxysterone 4-glucuronide excreted in the urine of pregnant women was 5:1.

L2 ANSWER 13 OF 25 CA COPYRIGHT 1995 ACS
T1 Electromodulated ***ion*** ***exchange*** chromatography
AU Ghatak-Roy, Amiya R.; Martin, Charles R.
SO Anal. Chem. (1986), 58(7), 1574-5
CODEN: ANCHAM; ISSN: 0003-2700
LA English
AB Electroactive ionomers are polymers which contain both electroactive and ***ion*** ***exchange*** functionalities; vinylferrocene and the -COO- groups of maleic acid serve as the electroactive and ***ion*** ***exchange*** functionalities, resp., in the electroactive ionomer described in this paper. The counterions for the cation exchange sites in such polymers can be electroreleased through electrochem. control of the oxidn. state of the ***ferrocene*** group. It is demonstrated that this electrorelease effect can be used to dramatically alter the retention vol. in a flow through working electrode/column based on an electroactive ionomer.

L2 ANSWER 14 OF 25 CA COPYRIGHT 1995 ACS
T1 Electroactive ***ion*** ***exchange*** polymers
AU Espenscheid, Mark W.; Martin, Charles R.
SO J. Electroanal. Chem. Interfacial Electrochem. (1985), 188(1-2), 73-84
CODEN: JEIEBC; ISSN: 0022-0728
LA English
AB Styrene-tetraphenylarsonium p-styrenesulfonate-vinylferrocene copolymer (I) [97905-10-7] was studied as an elec. active cation exchanger using polymer film-modified electrodes. The electrochem. properties of I are unusual in that the no. of ***ferrocene***-ferrocenium (Fc-Fc+) cyclic voltammetric waves depends on the no. of sulfo groups. The chem. microenvironment around some Fc groups changes in the presence of sulfo groups. The ***ion*** ***exchange*** properties of I can be modulated electrochem. When Fc-Fc+ in the film is quant. reduced, I is a cation exchanger and can incorporate electroactive cations from soln. When Fc is then quant. oxidized, Fc+ becomes the counterion for sulfo groups and the counterion initially present is expelled. Thus, I is an electroreleasing polymer. Possible applications of I are discussed.

L2 ANSWER 15 OF 25 CA COPYRIGHT 1995 ACS
T1 Method and apparatus for chromatography
IN Cais, Michael; Shimon, Moshe
PA Technion Research and Development Foundation, Israel; Technion Research and Development Foundation Ltd.
SO Belg., 38 pp.
CODEN: BEXXAL
PI BE 897308 A1 831201

AI BE 21-333 830810
PRATIL 82-66551 820815
DT Patent
LA French
AB A method and app. are described for the sepn. of 2 or more components in solns. by dynamic-column liq. chromatog. The app. contains a column in which the solid adsorbent is mobile. The technique can be applied to different types of liq. chromatog.: chromatog. on silica gel, reversed-phase chromatog., capillary chromatog., affinity chromatog., focusing chromatog., gel filtration chromatog., and ***ion*** - ***exchange*** chromatog. The technique was illustrated by several examples including the sepn. of mixts. contg. ***ferrocene*** and ***ferrocene*** aldehyde on silica gel; the sepn. of Na2Cr2O7.2H2O and CuSO4.5H2O by ***ion*** - ***exchange*** chromatog.; the sepn. of a mixt. of dyes, and the sepn. of human serum.

L2 ANSWER 16 OF 25 CA COPYRIGHT 1995 ACS
T1 Improved synthesis of .eta.6-arene-.eta.6-cyclopentadienyliron (II) salts. Synthesis of .eta.6-hydrazinobenzene-.eta.6-cyclopentadienyliron (II) picrate
AU Federman Neto, Alberto; Miller, Joseph
SO An. Acad. Bras. Cienc. (1982), 54(2), 331-3
CODEN: AABCAD; ISSN: 0001-3763
LA English
AB Exchange of PhR (R = Cl, F, AcNH, NH2, NH2NH) with ***ferrocene*** in the presence of Al powder and AlCl3 at 0.degree. gave the title compds., isolated as picrate salts. The salts were explosive and light sensitive. Treating .eta.6-chlorobenzene-.eta.6-cyclopentadienyliron picrate with hydrazine hydrate in EtOH gave .eta.6-hydrazinobenzene-.eta.6-cyclopentadienyliron picrate. The picrates may be transformed to tetrafluoroborates by an ***ion*** - ***exchange*** technique.

L2 ANSWER 17 OF 25 CA COPYRIGHT 1995 ACS
T1 Metalloboron cage compound - synthesis of closo-ferrocenoborane
AU Lu, Yixin; Huang, Xiyun; Sun, Cuiyang; Ding, Hongxun
SO Huaxue Xuebao (1982), 40(2), 191-3
CODEN: RHHPA4; ISSN: 0567-7351
LA Chinese
AB UV irradi. of a mixt. of (Et4N)2B10H10 and C5H5Fe(CO)2I (I) (C5H5 = cyclopentadienyl) gave 43% (Et4N)2(C5H5FeIIB10H10) (II). Similar reaction of K2B10H10 with I gave 45% K2(C5H5FeIIB10H10) (III). Redn. of I by NaBH4 gave (Et4N)2(C5H5FeIIB10H10). Percolation of III through a strongly acidic ***ion*** ***exchange*** gave (H3O)2(C5H5FeIIB10H10).

L2 ANSWER 18 OF 25 CA COPYRIGHT 1995 ACS
T1 Stabilization of negative charge by the cobalticinium nucleus
AU Sheats, John E.; Miller, William; Kirsch, Ted.
SO J. Organomet. Chem. (1975), 91(1), 97-104
CODEN: JORCAI
LA English
AB The acidity of alkylcobalticinium salts I (R = Me, Ph2CH; R1 = Me, H) is greatly enhanced and the basicity of aminocobalticinium salts is greatly reduced in comparison to alkyl- and aminobenzenes and -

ferrocenes. The Me hydrogens of 1,1'-dimethylcobalticinium ion ***exchange*** in 0.91 M NaOD in D₂O with a rate const. of 1.40 times. 10-2 min⁻¹ at 70.degree., and an activation energy of 25.4 +/- 1 kcal mole⁻¹. The pK_a of benzhydrylcobalticinium ion is 15.16 at 25.degree., approx. 10¹¹ times more acidic than triphenylmethane. 1,1'-Diaminocobalticinium, 13.5 +/- 0.1 and 18.1 +/- 0.1; 1-amino-1'-carboxycobalticinium, 18.06 +/- 0.05. These values are interpreted in terms of a strong electron-withdrawing field, inductive and resonance effects exerted by the cobalticinium moiety.

L2 ANSWER 19 OF 25 CA COPYRIGHT 1995 ACS
TI Liquid electron ***ion*** ***exchangers*** containing alkyl derivatives of ferrocene
AU Trofimov, M. A.; Leont'evskaya, P. K.; Pendin, A. A.; Nikol'skii, B.
SO Dokl. Akad. Nauk SSSR (1973), 212(2), 378-81 [Chem] CODEN: DANKAS
LA Russian
AB Liq. electron ***ion*** ***exchangers*** (redoxites) were prep'd. in the reduced form by dissolving the alkyl derivs. of ***ferrocene*** in octanol, nonanol, and decanol and in (BuO)₃PO.
(I). The oxidized form was obtained either by the heterogeneous oxidn. of the reduced form (using K₂Cr₂O₇) or by dissoln. of the perchlorates of the ***ferrocene*** derivs. in an org. solvent.
The oxidizing potentials of the redoxites depend on the compn. of the aq. phase, which suggests that the redox processes in the system are combined with the processes of ***ion*** ***exchange*** and complex formation of the ferricenyl nuclei with the anions of the supporting electrolyte. The dependence of E on the log of the av. activity of HClO₄ in aq. soln. is det'd. by the ratio of the concn. of the ferricenyl nuclei to that of HClO₄ in the org. phase and also by the formation const. of the complex. The potential of the redoxite does not depend on the no. of C atoms in the alkyl radical and decreases when passing from the alc. solns. to that of L.

L2 ANSWER 20 OF 25 CA COPYRIGHT 1995 ACS
TI Chemical-heat treatment of poly(vinyl alcohol) and products made from it
IN Bochkov, G. I.; Borshcheva, I. I.; Vol'f, L. A.; Kirilenko, Yu. K.; Okladnikova, E. P.; Vishnyakova, T. P.; Paushkin, Ya. M.; Vlasova, I. D.; Golubeva, I. A.; et al.
PA Kirov, S. M., Institute of Textile and Light Industry, Leningrad
SO U.S.S.R.
From: Otkrytiya, Izobret., Prom. Obraztsy, Tovarnye Znaki 1972, 49(25), 107.
CODEN: URXXAF
PI SU 348650 720823
AL SU 720911
DT Patent
LA Russian
AB Poly(vinyl alc.) [9002-89-5]-based electron-exchangers and

ion. ***exchangers*** were made by heat treating ***ferrocene***-contg. compds. deposited on the surface of the polymer.

L2 ANSWER 21 OF 25 CA COPYRIGHT 1995 ACS
TI Interaction of modified polypropylene with blood
AU Smurova, E. V.; Zurlova, O. M.; Sosin, S. L.; Antipova, B. A.; Novikova, S. P.; Karpinskaya, V. M.
SO Plast. Massy (1972), (4), 60-1
CODEN: PLMSAI
LA Russian
AB Sulfonated polypropylene-styrene-vinylferrocene graft copolymers (I) do not coagulate blood when in contact with it, have much lower hemolytic activity than sulfonated polypropylene-styrene graft copolymers (II), and they can be used for making prosthetic devices, esp. for heart surgery. II were made by grafting polypropylene (III) with styrene and then sulfonating the product. II with the ***ion*** ***exchange*** capacity .geq. 0.2 mequiv/g do not coagulate blood, but they hemolyze it and even completely destroy the erythrocytes. I were prep'd. by swelling III in the monomer mixt., adding Bz₂O₂, and heating to 70.deg..

L2 ANSWER 22 OF 25 CA COPYRIGHT 1995 ACS
TI Synthesis of cis- and trans- alpha- ***ferrocenyl*** beta-(2-imidazolyl)ethylene
AU Khassan, Kh. M.; Tyurin, V. D.; Nametkin, N. S.; Shvekhgimer, G. A.
SO Izv. Akad. Nauk SSSR, Ser. Khim. (1971), (7), 1590
CODEN: IASKA6
LA Russian
AB C₅H₅FeC₅H₄CH(OH)CH₂C(NH₂)₂OMe (Ia) and (CH₂NH₂)₂ in dry MeOH gave cis and trans forms of I in 74 and 21% yields, resp. Ia was formed from dry HCl and C₅H₅FeC₅H₄CH(OH)CH₂CN in Et₂O-MeOH. I were also formed from condensation of the Me imino ester of cis or trans forms of ***ferrocenylacrylic*** acid, with (CH₂NH₂)₂ in MeOH.
Condensation of formylferrocene and 2-methyl-2-imidazoline in MeONa-MeOH or in the presence of KU2 ***ion*** ***exchange*** resin (sulfonated styrene polymer) gave only the trans-I in 54 or 32% yield, resp.

L2 ANSWER 23 OF 25 CA COPYRIGHT 1995 ACS
TI Redox properties of ***ferrocene***-containing polymers
AU Nikol'skii, B. P.; Vishnyakova, T. P.; Gubin, S. P.; Paushkin, Ya. M.; Pendin, A. A.; Sokolinskaya, T. A.; Golubeva, I. A.
SO Dokl. Akad. Nauk SSSR (1968), 181(5), 1149-52
CODEN: DANKAS
LA Russian
AB A small amt. of a ***ferrocene***-contg. polymer (I) was oxidized by a soln. contg. N KCl, 0.4N HCl, and 10-3N FeCl₃ or by a soln. contg. N Na₂SO₄, 0.1N H₂SO₄, and 10-3N Ce(SO₄)₂. The oxidizing soln.-I system was enclosed in an electrolytic cell, the electromotive force (EMF) of which was measured from time to time by comparison with the EMF of a Pt electrode-calomel electrode galvanic cell. The EMF changes permitted calcn. of the amts. of the oxidant reduced by I during contact (B. P. Nikol'skii, 1964). Most I (24 I

were studied) were oxidized faster by $\text{Ce}(\text{SO}_4)_2$ than by FeCl_3 ; one exception was a polymer (II), prepd. by B. P. Nikol'ski's method (1967) from ***ferrocene*** and phthalic anhydride, which was more rapidly oxidized by FeCl_3 than by $\text{Ce}(\text{SO}_4)_2$, presumably due to penetration of Fe^{3+} into its network. Membranes were prepd. from polystyrene and the oxidized form of II (T. A. Sokolinskaya, et al., 1967). An electrode system was prepd. consisting of calomel electrode-agar- NaCl soln.-10-3N HClO_4 soln.-membrane. The electrolytic behavior of the system shows that ***ferrocene*** can be reversibly oxidized to the ferricenium ion. Thus, I can find application as ***ion*** - ***exchange*** resins or membranes, the redox ability of which can be varied considerably by changing the chem. structure.

L2 ANSWER 24 OF 25 CA COPYRIGHT 1995 ACS

TI Polymers based on ***ferrocene***
AU Vishnyakova, T. P.; Golubeva, I. A.; Sokolinskaya, T. A.
SO Usp. Khim. (1967), 36(12), 2136-66
CODEN: USKXAB
LA Russian AB Unavailable

L2 ANSWER 25 OF 25 CA COPYRIGHT 1995 ACS

TI Radiation stability of ***ion*** ***exchangers***
AU Kolditz, Lothar; Wendt, J.
SO Z. Chem. (1966), 6(10), 385-6
CODEN: ZECEAL
LA German AB Unavailable

[end of search]

Fe(Cp)₂ WASP 6/29/95

=> s ferrocen?

L1 9698 FERROCEN?

=> s ll and polymer

480943 POLYMER
L2 907 L1 AND POLYMER

=> s l2 and water(w)solub?

1013962 WATER
112799 SOLUB?
16352 WATER(W)SOLUB?
L3 3 L2 AND WATER(W)SOLUB?

=> d l3 1-3 bib,abs

L3 ANSWER 1 OF 3 CA COPYRIGHT 1995 ACS

TI Metalocene polymers. 46. Synthesis and characterization of ***water*** - ***soluble*** polyaspartamide-***ferrocene*** conjugates for biomedical applications
AU Swarts, Jannie C.; Neuse, Eberhard W.; Lamprecht, Gert J.
SO J. Inorg. Organomet. Polym. (1994), 4(2), 143-53
CODEN: JIOPE4; ISSN: 1053-0495

LA English
AB ***Polymer*** - ***ferrocene*** conjugates are synthesized from the polyamide poly- α,β -DL-[N-(3-(morpholin-4-yl)propyl)aspartamide-co-N-(2-aminoethyl)aspartamide], through coupling of amino side groups with the carboxyl function in a no. of ***ferrocenylcarboxylic*** acids, including ***ferrocenylacetic*** acid, 3-***ferrocenylpropanoic*** acid, 3-***ferrocenylbutanoic*** acid, 4-***ferrocenylbutanoic*** acid, and 4-***ferrocenyl***

4-hydroxypentanoic acid. The ***ferrocene*** complex has been chosen for conjugation by virtue of the cytotoxic properties obsd. with some of its derivs. The coupling reactions, mediated by HBTU (O-benzotriazolyl-N,N,N',N'-tetramethyluronium hexafluorophosphate), are brought about in DMF soln. and lead to degrees of substitution in the range of 25-95%. The resulting conjugates, fractionated by dialysis in tubing with a 12,000-14,000 mol. mass cutoff and collected in the solid state by freeze-drying, are completely sol. in water after isolation and retain this property in frozen aq. solns. Preliminary electrochem. data are reported, indicating a decreasing (i.e., less pos.) potential with increasing length of the aliph. electron-donating connecting link between the ***ferrocene*** and the carboxamide anchoring group. The 4-***ferrocenylbutanoyl*** substituent is assocd. with the least pos. potential of those structures investigated and, hence should provide conjugates with optimal in vivo stability in the ferricenium state. Selected conjugates will be submitted to screening tests for antineoplastic activity.

L3 ANSWER 2 OF 3 CA COPYRIGHT 1995 ACS

TI ***Water*** - ***soluble*** polyamides as potential drug carriers. VII. Synthesis of polymers containing intrachain- or extra-chain-type amine ligands by interfacial polymerization
AU Cuiba, Ursula; Neuse, Eberhard W.; Swarts, Jannie C.; Lamprecht, Gert J.
SO Angew. Makromol. Chem. (1994), 214, 137-52
CODEN: ANMCBO; ISSN: 0003-3146
LA English
AB Aliph. polyamides comprising poly(ethylene oxide) chain segments of various lengths, designed for use as drug carriers, were prepd. by interfacial polymn. of succinyl chloride with the 2 Jeffamine types ED-900 and ED-2001, formally described by the supplier asne glycol 800 and O,O'-bis(2-aminopropyl)poly(ethylene glycol) 1900. Copolyamides comprising both short-chain diamine and Jeffamine segments were similarly prepd., as were polyamides made up of cystine and diamine segments. The polymns. were performed in a 2-phase CH_2Cl_2 system at temps. near or below 0 degree. The product polymers, crudely fractionated by staged aq.-phase dialysis at an ultimate mol.-mass cut-off of 25,000, are collected after freeze-drying as water-sol. resins or solids and are characterized microanalytically and by $^1\text{H-NMR}$ spectroscopy. Inherent viscosities are in the range of 10-20 mL/g. The drug-binding potential of a representative target ***polymer*** is probed by the covalent anchoring of a ***ferrocene*** compd. used as a drug model, giving a water-sol. ***polymer*** - ***ferrocene*** conjugate.

L3 ANSWER 3 OF 3 CA COPYRIGHT 1995 ACS

TI ***Water*** - ***soluble*** ***polymer*** ***ferrocene*** conjugates for biomedical applications
AU Neuse, Eberhard W.; Mbonvane, Carol W.
SO Polym. Mater. Sci. Eng. (1989), 61, 94-8
CODEN: PMSEDG; ISSN: 0743-0515
LA English
AB Several copolyamides were treated with ***ferrocene*** derivs. to prep. for possible biomedical applications, water-sol. ***polymer*** - bound ***ferrocene*** complexes with varying distances between the ***ferrocene*** and the polyamide backbone. For example, poly- α,β -DL-[N-(3-(dimethylamino)propyl)aspartamide-co-N-(2-aminoethyl)aspartamide] was treated with ***ferrocenylpropanoic*** acid in the presence

of N-hydroxysuccinimide gave a 42% yield of a brown solid that was sol. in water and selected aprotic solvents.

[end of search]

Aminoferrocene 7/2/95

=> s 67251-69-8 (dimethylaminoferrocene)

L4 4 67251-69-8

=> d 14 1-4 bib,abs

L4 ANSWER 1 OF 4 CA COPYRIGHT 1995 ACS

AN 116:30958 CA

TI Development of large-area, air-stable photocathodes for the ultraviolet

AU Imrie, D. C.; Moghul, A. H.; Wells, K.; Charpak, G.; Peskov, V.

CS Brunel Univ., Uxbridge, UK

SO Nucl. Instrum. Methods Phys. Res., Sect. A (1991), A310(1-2), 122-7

CODEN: NIMAER; ISSN: 0168-9002

DT Journal

LA English

AB Results are presented for the reflection quantum efficiency as a

function of wavelength of thin films of 4 organometallic materials:

triferrocenylphosphine, dimethylaminoferrocene, porphyrin iron

complex and 1'-trimethyleneferrocenephane. The quantum efficiency

of thin films of CsI vacuum evapd. on to freshly-prepd. Cu or Al

surfaces on a borosilicate glass substrate are also measured. The

reflective quantum efficiency increases substantially if the photocathode is subjected to prolonged flushing in dry

CH₄ or argon

gas.

L4 ANSWER 2 OF 4 CA COPYRIGHT 1995 ACS

AN 115:268343 CA

TI Liquid and solid photocathodes and their applications for fast

gaseous particle detectors

AU Charpak, G.; Peskov, V.; Scigocki, D.; Lemenovskii, D.

CS CERN, Geneva, Switz.

SO IEEE Trans. Electr. Insul. (1991), 26(4), 623-30

CODEN: IETLAX; ISSN: 0018-9367

DT Journal

LA English

AB Two types of liq. photocathodes were investigated: semitransparent

and reflective. In the case of semitransparent photocathodes, the

photoemission increases strongly at certain thicknesses, when the

"electron temp." of the photoelectrons obtained in the applied elec.

field E is higher than the conduction-band energy V₀ of the liq. In

the case of reflective photocathodes, a thin intermediate layer of

vapor between the liq. and the gaseous phases contributes also to

the creation of photoelectrons, deteriorating the timing properties

of the photocathode. The best timing properties (apprx. 1 ns) and

the highest quantum efficiency were achieved with a reflective

photocathode made from a substrate with a small working function,

covered by an adsorbed layer of photosensitive vapors.

L4 ANSWER 3 OF 4 CA COPYRIGHT 1995 ACS

AN 104:186593 CA

TI The anomalous electrochemistry of the ferrocenylamines

AU Brierton, Wayne E.; Kashyap, Ram; El-Hashash, Maher; El-Kady,

Mohammed; Herberhold, Max

CS Univ. Texas Dallas, Richardson, TX, 75083-0688, USA

SO Organometallics (1986), 5(5), 1029-31

CODEN: ORGN7; ISSN: 0276-7333

DT Journal

LA English

OS CIACS

AB In the electrochem. of ferrocenylamines, the amine substituent acts

as an unusually potent activating group for ferrocene oxidn., as

shown by various Hammett-type correlations, with ferrocenylamine

oxidizing at a potential 0.37 V more neg. than ferrocene itself.

Triferrocenylamine, a compd. with a nearly planar N, produces three

reversible oxidn. waves, the first of which is 0.31 neg. of ferrocene's oxidn. These and other data suggest that

resonance interaction between ferrocene and the N lone pair is an important

factor in ferrocene oxidn. This contrasts with conclusions of

earlier studies in which ferrocenes, with primarily electron-withdrawing groups, were examd.

L4 ANSWER 4 OF 4 CA COPYRIGHT 1995 ACS

AN 98:34719 CA

TI Metallocene electrochemistry. 4. Ferrocenylalkyl-substituted

quaternary ammonium cations in aqueous, organic, and molten-salt

phases

AU Gale, R. J.; Motyl, K. M.; Job, R.

CS Dep. Chem., Colorado State Univ., Fort Collins, CO, 80523, USA

SO Inorg. Chem. (1983), 22(1), 130-3

CODEN: INOCAJ; ISSN: 0020-1669

DT Journal

LA English

OS CIACS

AB Redox, diffusion and soly. properties of several ferrocenylalkyl

quaternary ammonium derivs. were detd. in aq., MeCN, and room-temp.

AlCl₃-1-butylpyridinium chloride melt electrolytes. Electrochem.

evidence supports the premise that nucleophilic attack of ferrocenium ion charge-transfer products occurs in basic

melts, the extent of which relates to electronic substituent effects. In

acidic melts, the quaternary salt decomps. and undergoes intramol.

electron transfer from the carbonium ion to the metal center. The

yellow ferrocenecarboxylic acid dissolves in slightly acidic melts

to produce a red color, and a reversible, 1-electron wave is found

at +0.726 V vs. Al (2:1) ref.

=> s 156222 0-96-1

L5 1 156220-96-1 (aminoferrocenium ion)

=> d 15 bib,abs

L5 ANSWER 1 OF 1 CA COPYRIGHT 1995 ACS

AN 121:67920 CA

TI Correction of 180 errors in tables of standard electrode potentials

- a discussion with G. Milazzo and S. Caroli

AU Huang, Shihua

CS Dep. Appl. Chem., Nanjing Inst. of Chem. Technol., Nanjing, Peop.

Rep. China

SO Nanjing Huagong Xueyuan Xuebao (1993), 15(4), 1-10

CODEN: NAXUEL; ISSN: 1000-5994

DT Journal

LA Chinese

AB Tables of std. electrode potentials, authored by Professor G.

Milazzo (Chairman of the International Institute of Bioelectrochem.

and Italian phys. chemist) and S. Caroli, is recognized by the International Union of Pure and Applied Chem. (IUPAC) as an authoritative work in the field of electrochem. It contains 2498 data, which are widely applied in various relevant fields of chem.

The author is the 1st to find that there are 180 errors (apprx. 7.2%) in the data, the elementary inference of electrode potentials, the reversibility of electrode reactions and the coordination no. of complexes. This paper, based on the nature of redox of matter and the law of changes of std. electrode potentials, has systematically analyzed and cor. these errors.

=> s 1273-82-1 (aminoferrrocene)

L6 40 1273-82-1

=> d 16 1-40 ti,an,so,la

L6 ANSWER 1 OF 40 CA COPYRIGHT 1995 ACS
T1 Polarizability of ferrocene derivatives from quantum mechanical

delta-function potentials
AU Semwal, R. P.; Balodi, J. P.
SO Indian J. Chem., Sect. A: Inorg., Bio-inorg., Phys., Theor. Anal. Chem. (1995), 34A(3), 206-9
CODEN: ICACEC; ISSN: 0376-4710
LA English

L6 ANSWER 2 OF 40 CA COPYRIGHT 1995 ACS
T1 Kinetics of the thermal decomposition of ferrocenyl azide: character

of ferrocenyl nitrene
AU Steel, C.; Rosenblum, M.; Geyh, A. S.
SO Int. J. Chem. Kinet. (1994), 26(6), 631-41
CODEN: ICKBO; ISSN: 0538-8066
LA English

L6 ANSWER 3 OF 40 CA COPYRIGHT 1995 ACS
T1 Correction of 180 errors in tables of standard electrode potentials

- a discussion with G. Milazzo and S. Caroli
AU Huang, Shihua
SO Nanjing Huagong Xueyuan Xuebao (1993), 15(4), 1-10
CODEN: NAXUEI; ISSN: 1000-5994
LA Chinese

L6 ANSWER 4 OF 40 CA COPYRIGHT 1995 ACS
T1 Syntheses and chelation of N-ferrocenylamines

AU Ma, Huairang; Yang, Bingqin; Chen, Zhibing; Li, Jingsong
SO Gaodeng Xueyuan Huaxue Xuebao (1993), 14(4), 504-7
CODEN: KTHPDM; ISSN: 0251-0790
LA Chinese

L6 ANSWER 5 OF 40 CA COPYRIGHT 1995 ACS
T1 Electrocatalytic oxidation of NADH on thin poly(acrylic acid) film

coated graphite felt electrode immobilizing ferrocene and diaphorase
AU Kashiwagi, Yoshitomo; Osa, Tetsuo
SO Chem. Lett. (1993), (4), 677-80
CODEN: CMLTAG; ISSN: 0366-7022
LA English

L6 ANSWER 6 OF 40 CA COPYRIGHT 1995 ACS
T1 Synthesis and reaction of N-ferrocenylamine

AU Ma, Huairang; Chen, Zhibing; Yang, Bingqin; Li, Jingsong
SO Gaodeng Xueyuan Huaxue Xuebao (1992), 13(5), 633-5
CODEN: KTHPDM; ISSN: 0251-0790
LA Chinese

L6 ANSWER 7 OF 40 CA COPYRIGHT 1995 ACS
T1 Polarization mechanisms and properties of substituted ferrocenes: a

comparative study
AU Waite, J.; Papadopoulos, M. G.
SO J. Phys. Chem. (1991), 95(14), 5426-31

CODEN: JPCHAX; ISSN: 0022-3654
LA English

L6 ANSWER 8 OF 40 CA COPYRIGHT 1995 ACS
T1 Molecular and electronic structure of the complexes formed by the

Schiff base N-(o-hydroxybenzylidene)ferroceneamine with cobalt(II), nickel(II), copper(II), and zinc(II)
AU Bracci, Michela; Ercolani, Claudio; Floris, Barbara; Bassetti, Mauro; Chiesi-Villa, Angiola; Guastini, Carlo
SO J. Chem. Soc., Dalton Trans. (1990), (4), 1357-63
CODEN: JCDTBI; ISSN: 0300-9246
LA English

L6 ANSWER 9 OF 40 CA COPYRIGHT 1995 ACS
T1 Reaction of ferrocenylamine with some anhydrides

AU Ma, Huairang; Chen, Zhibing
SO Xibei Daxue Xuebao, Ziran Kexueban (1989), 19(2), 114-15
CODEN: HPHPAQ
LA Chinese

L6 ANSWER 10 OF 40 CA COPYRIGHT 1995 ACS
T1 Ferrocene derivatives. 23. Isocyanoferrrocene and isothiocyanatoferrrocene

AU Knox, Graham R.; Pauson, Peter L.; Willison, Debra; Solcaniova, Eva; Toma, Stefan
SO Organometallics (1990), 9(2), 301-6
CODEN: ORGND7; ISSN: 0276-7333
LA English

L6 ANSWER 11 OF 40 CA COPYRIGHT 1995 ACS
T1 Moessbauer studies on ferrocene complexes. XVII. Ferrocenylamines

and ferrocenylphosphines
AU Houlton, A.; Bishop, P. T.; Roberts, R. M. G.; Silver, J.; Herberhold, M.
SO J. Organomet. Chem. (1989), 364(3), 381-9
CODEN: JORCAL; ISSN: 0022-328X
LA English

L6 ANSWER 12 OF 40 CA COPYRIGHT 1995 ACS
T1 Determination of amino acids by high-performance liquid chromatography with electrochemical detection using

ferrocene derivatization reagents
AU Shimada, Kazutake; Kawai, Yukinori; Oe, Tomoyuki; Nambara, Toshio
SO J. Liq. Chromatogr. (1989), 12(3), 359-71
CODEN: JLCHD8; ISSN: 0148-3919
LA English

L6 ANSWER 13 OF 40 CA COPYRIGHT 1995 ACS
T1 Sensitive ferrocene reagents for derivatization of amines for

high-performance liquid chromatography with electrochemical detection
AU Shimada, Kazutake; Oe, Tomoyuki; Tanaka, Makoto; Nambara, Toshio
SO J. Chromatogr. (1989), 487(2), 247-55
CODEN: JOCRAM; ISSN: 0021-9673
LA English

L6 ANSWER 14 OF 40 CA COPYRIGHT 1995 ACS
T1 Isocyanide derivatives of ferrocene. Preparation, complexation and

redox properties
AU El-Shibi, Taha; Sigmueller, Franz; Hermann, Rudolf; Fernando, M.; Carvalho, N. N.; Pombeiro, Armando J. L.
SO J. Organomet. Chem. (1987), 335(2), 239-47
CODEN: JORCAL; ISSN: 0022-328X
LA English

L6 ANSWER 15 OF 40 CA COPYRIGHT 1995 ACS
T1 Synthesis of heterobimetallic complexes of N-ferrocenyl-

2-hydroxybenzylideneimine
AU Ertas, Muntaz; Ahsen, Vefa; Gurek, Aysegul; Bekaroglu, Ozer

SO *J. Organomet. Chem.* (1987), 336(1-2), 183-6

CODEN: JORCAI; ISSN: 0022-328X

LA English

L6 ANSWER 16 OF 40 CA COPYRIGHT 1995 ACS

TI Synthesis of bis(ferrocenylamino)glyoxime and its nickel(II) complex

AU Ertas, M.; Ahsen, V.; Gul, A.; Bekaroglu, O.

SO *J. Organomet. Chem.* (1987), 333(3), 383-5

CODEN: JORCAI; ISSN: 0022-328X

LA English

L6 ANSWER 17 OF 40 CA COPYRIGHT 1995 ACS

TI Amide tricobalt-carbon clusters with multiple redox centers

AU Robinson, Brian H.; Simpson, Jim; Trounson, Mary E.

SO *Aust. J. Chem.* (1986), 39(9), 1435-47

CODEN: AJCHAS; ISSN: 0004-9425

LA English

L6 ANSWER 18 OF 40 CA COPYRIGHT 1995 ACS

TI N-aryl-O-(diphenylphosphinoyl)hydroxylamines. Electrophilic

amination of amines to hydrazines. A model reaction for carcinogenic

aromatic amines

AU Boche, Gernot; Sommerlade, Reinhard H.; Bosold, Ferdinand

SO *Angew. Chem.* (1986), 98(6), 563-4

CODEN: ANCEAD; ISSN: 0044-8249

LA German

L6 ANSWER 19 OF 40 CA COPYRIGHT 1995 ACS

TI The anomalous electrochemistry of the ferrocenylamines

AU Britton, Wayne E.; Kashyap, Ram; El-Hashash, Maher; El-Kady, Mohammed; Herberhold, Max

SO *Organometallics* (1986), 5(5), 1029-31

CODEN: ORGND7; ISSN: 0276-7333

LA English

L6 ANSWER 20 OF 40 CA COPYRIGHT 1995 ACS

TI Basic study on the use of organometallic compounds as photoconductors in reprography

AU Baumgaertner, Armin; Kersten, Peter; Petrikat, Klaus; Ellinger, Max

SO *Forschungsber. - Bundesminst. Forsch. Technol., Technol. Forsch.*

Entwickl. (1984), BMFT-FB-T 84-112, 102 pp.

CODEN: BFTEAJ; ISSN: 0340-7608

LA German

L6 ANSWER 21 OF 40 CA COPYRIGHT 1995 ACS

TI Moessbauer studies on ferrocene complexes. XII. Relationships

between oxidation potentials and quadrupole splittings

AU Roberts, R. M. G.; Silver, J.

SO *J. Organomet. Chem.* (1984), 263(2), 235-41

CODEN: JORCAI; ISSN: 0022-328X

LA English

L6 ANSWER 22 OF 40 CA COPYRIGHT 1995 ACS

TI Ferrocenylamines

AU Herberhold, Max; Ellinger, Max; Krennitz, Walter

SO *J. Organomet. Chem.* (1983), 241(2), 227-40

CODEN: JORCAI; ISSN: 0022-328X

LA German

L6 ANSWER 23 OF 40 CA COPYRIGHT 1995 ACS

TI Synthesis and certain properties of 4-ferrocenylaminoglutaric acid

derivatives

AU Krasnov, V. P.; Shashmurina, A. A.; Alekseeva, L. V.; Anoshina, G.

M.; Baryhin, A. S.

SO *Khim.-Farm. Zh.* (1980), 14(10), 45-8

CODEN: KHFZAN; ISSN: 0023-1134

LA Russian

L6 ANSWER 24 OF 40 CA COPYRIGHT 1995 ACS

TI The temperature dependence of the mixed and intervalence state in

mono-oxidized trans-.mu.-(as-indacene)bis(cyclopentadienyliron)

AU Iijima, Seichiro; Motoyama, Izumi; Sano, Hirotochi

SO *Bull. Chem. Soc. Jpn.* (1980), 53(11), 3180-3

CODEN: BCSJAS; ISSN: 0009-2673

LA English

L6 ANSWER 25 OF 40 CA COPYRIGHT 1995 ACS

TI X-ray photoelectron spectroscopy of metal, metal oxide, and carbon

electrode surfaces chemically modified with ferrocene and ferrocenium

AU Umama, M.; Rolison, D. R.; Nowak, R.; Daum, P.; Murray, Royce W.

SO *Surf. Sci.* (1980), 101(1-3), 295-309

CODEN: SUSCAS; ISSN: 0039-6028

LA English

L6 ANSWER 26 OF 40 CA COPYRIGHT 1995 ACS

TI Electron structure and chemical properties of arene-cyclopentadienyliron derivatives

AU Belchenko, O. I.; Schastnev, P. V.; Bashurova, V. S.

SO *J. Organomet. Chem.* (1980), 187(3), 375-9

CODEN: JORCAI; ISSN: 0022-328X

LA English

L6 ANSWER 27 OF 40 CA COPYRIGHT 1995 ACS

TI Synthesis and study of the antineoplastic activity of ferrocene-containing compounds

AU Yashchenko, G. N.; Shashmurina, A. A.; Anoshina, G. M.; Gorelova, L.

A.; Evstigneeva, N. G.; Alekseeva, L. V.; Radina, L. B.

SO *Khim.-Farm. Zh.* (1978), 12(10), 68-72

CODEN: KHFZAN; ISSN: 0023-1134

LA Russian

L6 ANSWER 28 OF 40 CA COPYRIGHT 1995 ACS

TI A molecular orbital study of the ground and excited state properties

of metallocenes of the first row transition metal ions. II

AU Armstrong, D. R.; Fortune, R.; Perkins, P. G.

SO *Rev. Roum. Chim.* (1978), 23(8), 1179-202

CODEN: RRCHAX; ISSN: 0035-3930

LA English

L6 ANSWER 29 OF 40 CA COPYRIGHT 1995 ACS

TI Chemically modified electrodes. II. Predictability of formal

potentials of covalently immobilized charge-transfer reagents

AU Lenhard, J. R.; Rocklin, R.; Abruna, H.; Willman, K.; Kuo, K.

Nowak, R.; Murray, Royce W.

SO *J. Am. Chem. Soc.* (1978), 100(16), 5213-15

CODEN: JACSAT; ISSN: 0002-7863

LA English

L6 ANSWER 30 OF 40 CA COPYRIGHT 1995 ACS

TI Study of bimetallic organometallic compounds of transition metals

and ferrocene

AU Orlik, Yu. G.

SO *Tezisy Dokl. - Resp. Konf. Molodykh Uch.-Khim.*, 2nd (1977), Volume

1, 61 Publisher: Akad. Nauk Est. SSR, Inst. Khim., Tallinn, USSR.

CODEN: 38RMAG

LA Russian

L6 ANSWER 31 OF 40 CA COPYRIGHT 1995 ACS

TI Studies of phenylazoferrocene and derivatives

AU Roling, Paul V.; Rauch, Marvin D.

SO *Synth. React. Inorg. Met.-Org. Chem.* (1978), 8(1), 83-90

CODEN: SRIMCN; ISSN: 0094-5714

LA English

L6 ANSWER 32 OF 40 CA COPYRIGHT 1995 ACS

TI Infrared spectra and some characteristics of the structure of ferrocene-containing azomethines

AU Alekseeva, L. A.; Yashchenko, G. N.; Sinitsyna, T. A.; Petrov, L. A.

SO *Zh. Obshch. Khim.* (1977), 47(8), 1874-7

CODEN: ZOKHAA

LA Russian

L6 ANSWER 33 OF 40 CA COPYRIGHT 1995 ACS

TI Synthesis of ferrocenylamine azomethines

- AB The polarizability, α , and the second hyperpolarizability, γ , of some ferrocene derivs. are detd. by using an optimized semiempirical approach. The bonding in ferrocene has been investigated through the study of the above polarization properties. The results from the ferrocene derivs. have been correlated with the corresponding substituted benzenes. Scales have been presented, where the derivs. are classified according to their polarization properties. The effect of delocalized π electrons, charge transfer, and geometry variations of α and γ are commented upon. Selected results of various other properties (e.g., the first hyperpolarizability) are used to demonstrate that some mechanisms (e.g., charge transfer) and changes in geometry may have widely different effects on the mol. properties. Common trends and patterns of behavior are recognized and discussed. The reported results are in good agreement with the exptl. detd. ones.
- L6 ANSWER 34 OF 40 CA COPYRIGHT 1995 ACS
T1 Cobaltocenium salts. II. Spectroscopic and polarographic properties of some cobaltocenium derivatives
AU El Murr, Nabil
SO J. Organomet. Chem. (1976), 112(2), 189-99
CODEN: JORCAI
LA French
- L6 ANSWER 35 OF 40 CA COPYRIGHT 1995 ACS
T1 Detection and identification of intermediate and final products of electrochemical reactions by the rotating ring-disk electrode method
AU Nekrasov, L. N.
SO Faraday Discuss. Chem. Soc. (1973), 56, 308-16
CODEN: FDCSE7
LA English
- L6 ANSWER 36 OF 40 CA COPYRIGHT 1995 ACS
T1 Carbon-13 NMR spectra and electronic effects in iron π -cyclopentadienyl derivatives. I. Homoannular substituent effect in monosubstituted ferrocene
AU Nesmeyanov, A. N.; Petrovskii, P. V.; Fedorov, L. A.; Rohas, V. I.; Fedin, E. I.
SO Zh. Strukt. Khim. (1973), 14(1), 49-57
CODEN: ZSTKAI
LA Russian
- L6 ANSWER 37 OF 40 CA COPYRIGHT 1995 ACS
T1 Ferrocenyl radical and nitrene: formation of nitroferrocene with oxygen
AU Sutherland, Ronald G.; Abramovitch, Rudolf A.; Azogu, C. I.
SO J. Chem. Soc. D. (1971), (3), 134-5
CODEN: CCIDAO
LA English
- L6 ANSWER 38 OF 40 CA COPYRIGHT 1995 ACS
T1 Electronic effects in the ferrocene ring system by proton magnetic resonance spectroscopy
AU Slocum, D. W.; Engelmann, T. R.; Lewis, Robert; Kurland, R. J.
SO J. Chem. Eng. Data (1968), 13(3), 378-9
CODEN: JCEAAX
LA English
- L6 ANSWER 39 OF 40 CA COPYRIGHT 1995 ACS
T1 Correlation analysis of the chemical shifts for protons of cyclopentadiene in the proton magnetic resonance spectra of monosubstituted ferrocenes
AU Dvoryantseva, G. G.; Sheinker, Yu. N.; Gubin, S. P.
SO Reakts. Spisobn. Org. Soedin. (1966), 3(3), 86-97
CODEN: RSOTAY
LA Russian
- L6 ANSWER 40 OF 40 CA COPYRIGHT 1995 ACS
T1 Semiempirical molecular-orbital calculations. IV. Some metallocenes
AU Armstrong, Andrew Thurman; Carroll, D. G.; McGlynn, Sean P.
SO J. Chem. Phys. (1967), 47(3), 1104-11
CODEN: JCPSA6
LA English
- => d 16 7,21,22,25,29 ti,an,so,la,abs
- L6 ANSWER 7 OF 40 CA COPYRIGHT 1995 ACS
T1 Polarization mechanisms and properties of substituted ferrocenes: a comparative study
AU Waite, J.; Papadopoulos, M. G.
SO J. Phys. Chem. (1991), 95(14), 5426-31
CODEN: JPCCHX; ISSN: 0022-3654
LA English

- AB The polarizability, α , and the second hyperpolarizability, γ , of some ferrocene derivs. are detd. by using an optimized semiempirical approach. The bonding in ferrocene has been investigated through the study of the above polarization properties. The results from the ferrocene derivs. have been correlated with the corresponding substituted benzenes. Scales have been presented, where the derivs. are classified according to their polarization properties. The effect of delocalized π electrons, charge transfer, and geometry variations of α and γ are commented upon. Selected results of various other properties (e.g., the first hyperpolarizability) are used to demonstrate that some mechanisms (e.g., charge transfer) and changes in geometry may have widely different effects on the mol. properties. Common trends and patterns of behavior are recognized and discussed. The reported results are in good agreement with the exptl. detd. ones.
- L6 ANSWER 21 OF 40 CA COPYRIGHT 1995 ACS
T1 Moessbauer studies on ferrocene complexes. XII. Relationships between oxidation potentials and quadrupole splittings
AU Roberts, R. M. G.; Silver, J.
SO J. Organomet. Chem. (1984), 263(2), 235-41
CODEN: JORCAI; ISSN: 0022-328X
LA English
AB A linear relationship was found between oxidn. potentials (measured as quarter-wave potentials $E_{\text{degree.1/4}}$ and 57Fe Moessbauer quadrupole splittings (QS) for mono- and disubstituted ferrocenes. MO energy levels in ferrocenes were related to the variation of both $E_{\text{degree.1/4}}$ and QS with Hammett substituent parameters.
- L6 ANSWER 22 OF 40 CA COPYRIGHT 1995 ACS
T1 Ferrocenylamines
AU Herbertold, Max; Ellinger, Max; Kremnitz, Walter
SO J. Organomet. Chem. (1983), 241(2), 227-40
CODEN: JORCAI; ISSN: 0022-328X
LA German
AB A general method for the prepn. of ferrocenylamines involves the reactions of ferrocenyl bromide, FcBr, with the Na salt of an amine or amide in the presence of copper(I) bromide/pyridine. The syntheses of diferrocenylphenylamine and triferrocenylamine, NFc2Ph and NFc3, resp., are reported, and the hydrolysis of N-ferrocenylacetamide to give ferrocenylamine, NH2Fc, is described. The system of the ferrocenyl- and/or phenyl-substituted derivs. of ammonia, NFcnX3-n ($n = 0-3$; X = H, Ph), is characterized on the basis of mass, UV, visible, and 1H and 13C NMR spectra.
- L6 ANSWER 25 OF 40 CA COPYRIGHT 1995 ACS
T1 X-ray photoelectron spectroscopy of metal, metal oxide, and carbon electrode surfaces chemically modified with ferrocene and ferricenium
AU Umana, M.; Rollison, D. R.; Nowak, R.; Daum, P.; Murray, Royce W.
SO Surf. Sci. (1980), 101(1-3), 295-309
CODEN: SUSCAS; ISSN: 0039-6028
LA English
AB Monomol. and multilayers of ferrocene derivs. were deposited on or bonded to electrodes and examd. by XPS. In many cases the prepn.

leaves the modified surface in an oxidized, ferricenium state.

Evidence supporting this and possible oxidative mechanisms is discussed.

L6 ANSWER 29 OF 40 CA COPYRIGHT 1995 ACS

TI Chemically modified electrodes. II. Predictability of formal

potentials of covalently immobilized charge-transfer reagents

AU Lenhard, J. R.; Rocklin, R.; Abruna, H.; Wilman, K.; Kuo, K.

Nowak, R.; Murray, Royce W.

SO J. Am. Chem. Soc. (1978), 100(16), 5213-15

CODEN: JACSAT; ISSN: 0002-7863

LA English

AB A series of redox reagents was covalently immobilized on metal oxide

(SnO₂, RuO₂, PtO) and glassy C electrodes. The immobilized redox

reagents include tetraphenylporphyrin and metallo-tetraphenylporphyrins, nitroaroms., Ru(II)

complexes, tetrathiafulvalene, and ferrocenes. Comparison of formal

potentials E⁰ for electron transfer reactions of immobilized reagents with

those of their nonimmobilized soln. analogs reveals for 33 comparisons an av. difference of only 36 mV. E⁰ values are thus

moderately insensitive to the act of immobilization, supporting the

predictable character of chem. modified electrodes.

[end of search]

Aminoferrocene 7/13/95

=> s 1273-82-1

L1 40 1273-82-1

=> s 11 and synthesis

589528 SYNTHESIS

L2 6 L1 AND SYNTHESIS

=> d 12 1-6 ti,au,so,la

L2 ANSWER 1 OF 6 CA COPYRIGHT 1995 ACS

TI ***Synthesis*** and reaction of N-ferrocenylamine acid

AU Ma, Huairang; Chen, Zhibing; Yang, Bingqin; Li, Jinsong

SO Gaodeng Xuexiao Huaxue Xuebao (1992), 13(5), 633-5

CODEN: KTHPDM; ISSN: 0251-0790

LA Chinese

L2 ANSWER 2 OF 6 CA COPYRIGHT 1995 ACS

TI ***Synthesis*** of heterobimetallic complexes of

N-ferrocenyl-2-hydroxybenzylideneimine

AU Ertas, M.; Ahsen, V.; Gul, A.; Bekaroglu, O.; Bekaroglu, Ozer

SO J. Organomet. Chem. (1987), 336(1-2), 183-6

CODEN: JORCAI; ISSN: 0022-328X

LA English

L2 ANSWER 3 OF 6 CA COPYRIGHT 1995 ACS

TI ***Synthesis*** of bis(ferrocenylamino)glyoxime and its

nickel(II) complex

AU Ertas, M.; Ahsen, V.; Gul, A.; Bekaroglu, O.

SO J. Organomet. Chem. (1987), 333(3), 383-5

CODEN: JORCAI; ISSN: 0022-328X

LA English

L2 ANSWER 4 OF 6 CA COPYRIGHT 1995 ACS

TI ***Synthesis*** and certain properties of 4-

ferrocenylaminoglutamic acid derivatives

AU Krasov, V. P.; Shashmurina, A. A.; Alekseeva, L. V.; Anoshina, G.

M.; Barybin, A. S.

SO Khim.-Farm. Zh. (1980), 14(10), 45-8

CODEN: KHFZAN; ISSN: 0023-1134

LA Russian

L2 ANSWER 5 OF 6 CA COPYRIGHT 1995 ACS

TI ***Synthesis*** and study of the antineoplastic

activity of

ferrocene-containing compounds

AU Yashchenko, G. N.; Shashmurina, A. A.; Anoshina, G. M.; Gorelova, L.

A.; Evstigneeva, N. G.; Alekseeva, L. V.; Radina, L. B.

SO Khim.-Farm. Zh. (1978), 12(10), 68-72

CODEN: KHFZAN; ISSN: 0023-1134

LA Russian

L2 ANSWER 6 OF 6 CA COPYRIGHT 1995 ACS

TI ***Synthesis*** of ferrocenylamine azomethines

AU Yashchenko, G. N.; Shashmurina, A. A.; Petrov, L. A.; Latosh, N. I.

SO Zh. Obshch. Khim. (1976), 46(11), 2631

CODEN: ZOKHA4

LA Russian

=> d 12 1-6 abs

L2 ANSWER 1 OF 6 CA COPYRIGHT 1995 ACS

GI Diagram(s) available in offline prints and/or printed CA

issue

AB Seven N-ferrocenylamine acids have been synthesized and

characterized by elemental anal., IR and 1H NMR. The investigation

on the chelation of acid I (Fc = ferrocenyl) with Cu²⁺ and Zn²⁺

ions demonstrates the coordination of the oxygen atom on the

amide group to the metallic ion.

L2 ANSWER 2 OF 6 CA COPYRIGHT 1995 ACS

AB N-Ferrocenyl-2-hydroxybenzylideneimine was prepd. by

condensing ferrocenylamine with salicylaldehyde. Cobalt(II) and

zinc(II) complexes of the new ligand were isolated and

characterized.

L2 ANSWER 3 OF 6 CA COPYRIGHT 1995 ACS

AB Bis(ferrocenylamino)glyoxime has been prepd. by the

reaction of aminoferrocene with anti-dichloroglyoxime. The nickel(II)

complex of this new compd. is also described.

L2 ANSWER 4 OF 6 CA COPYRIGHT 1995 ACS

AB Reaction of FeNH₂ (Fc = ferrocenyl) with

MeO₂CCH₂CH₂CH₂CO₂Me (R = phthalimido) in alc. soln. in a sealed ampul at 80.degree.,

followed by treatment with HCl gave

MeO₂CCH₂CH₂CH₂CH(NHFc)CO₂Me.HCl, which was

saponified to give 2-

HO₂CCH₂CH₂CH₂CH(NHFc)CO₂H, which at 40

mg/kg gave 30% inhibition of sarcoma 37 in mice.

L2 ANSWER 5 OF 6 CA COPYRIGHT 1995 ACS

AB P-(CICH₂CH₂)₂NC₆H₄CH₂CH(CO₂Me)NHCOFc (I,

Fc = ferrocenyl), FcCH₂N(CH₂CH₂CH₂CO₂Me)NHCOFc (R = p-

(CICH₂CH₂)₂NC₆H₄CH₂CH(NHAc)), RICH₂NHFc, and

RICH₂NHFc (R = p-(CICH₂CH₂)₂NC₆H₄) were prepd. in 30-78% yields.

Thus, heating FcCOC₂ with p-

(CICH₂CH₂)₂NC₆H₄CH₂CH(CO₂Me)NHAc gave 50% I.

Test data were given for the antineoplastic activity of the prepd. compds. in mice against sarcoma 37, 180 etc.

L2 ANSWER 6 OF 6 CA COPYRIGHT 1995 ACS

AB Condensation of FeNH₂ (Fc = ferrocenyl) with RCHO

gave 17-85% FcN:CHR (R = Ph, p-O₂NC₆H₄, p-Me₂NC₆H₄, 2-furyl,

5-nitro-2-furyl, PhCH:CH).

=> s 11 not 12

L3 34 L1 NOT L2

=> d l3 1-34 ti,au,so,la

L3 ANSWER 1 OF 34 CA COPYRIGHT 1995 ACS
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delta-function potentials
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L3 ANSWER 2 OF 34 CA COPYRIGHT 1995 ACS
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L3 ANSWER 3 OF 34 CA COPYRIGHT 1995 ACS
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L3 ANSWER 4 OF 34 CA COPYRIGHT 1995 ACS
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L3 ANSWER 5 OF 34 CA COPYRIGHT 1995 ACS
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 CODEN: JPCHAX; ISSN: 0022-3654
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L3 ANSWER 7 OF 34 CA COPYRIGHT 1995 ACS
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L3 ANSWER 8 OF 34 CA COPYRIGHT 1995 ACS
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L3 ANSWER 10 OF 34 CA COPYRIGHT 1995 ACS
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L3 ANSWER 11 OF 34 CA COPYRIGHT 1995 ACS
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L3 ANSWER 14 OF 34 CA COPYRIGHT 1995 ACS
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