Density functional theory calculations were employed to investigate the (001), (210), (III), and (110) surfaces of, F~S2' The surface free ene:gies were calculated in equilibrium with a sulfur environment using firstpnnclples based thermodynamics approach. Surfaces that feature metal atoms in their outermost layer are predicted to be higher m energy. Wlthm the studied subset of (I x I) terminations, the stoichiometric (001) surface termmated by a layer of sulfur atoms is the most stable for sulfur-lean condition. For increasingly sulfur-nch enVIronment, two structures were found to have notably lower surface energies compared to others. They have (210) and (Ill) orientation, both terminated by layers of sulfur. Interestingly, these surfaces are nonstoichiometric exhibiting an excess of sulfur atoms.