Final Technical Report

CRADA 2009S001: Investigation of the Superconducting RF Properties of Large Grain Ingot Niobium

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Summary

This CRADA intended to explore the properties of large grain ingot niobium by fabricating four single cell TESLA shaped accelerating cavities. Once the cavities were fabricated, SRF performance would be measured.

Results

Niowave received four discs of large grain ingot niobium from JLAB in February 2009. Niowave cut samples from each disc and tested the RRR, with results shown in Table 1, and shown graphically in Figure 1.

Table 1. Measured RRR values corresponding to each disk sample.

Disk designation (written in "Sharpie")	Disk Diameter (in)	Disk faces with wire EDM	Other markings (stamped)	RRR
LG-A 2370 4/2008	12.779	2 sides		66
LG-B 2379 4/2008	12.595	2 sides		149
LG-C	12.950	1 side		113
LG-D	13.148	1 side	CBMM logo "Nb METAL" "TOP"	108

Figure 1: Graphical representation of RRR values for each disk sample.

After the RRR was measured with disappointing results, the project lost interest. A no cost extension was signed in July 2009 to allow progress until June 2010, but ultimately no further work was accomplished by either party.

Conclusions

No firm conclusions were drawn, as further investigations were not made. Large grain ingot niobium has shown real potential for high accelerating gradient superconducting cavities. However, this particular CRADA did not gather enough data to reach any conclusions in this regard.

Intellectual Property and Inventions

No intellectual property was generated by this CRADA, and as a result no inventions were created.