

STUDIES OF NIOBIUM THIN FILMS DEPOSITED BY COAXIAL ENERGETIC DEPOSITION*

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Abstract

A Coaxial Energetic Deposition process based on a cathodic arc has been developed at Alameda Applied Sciences Corporation. A feasibility study of coating Niobium on small, flat samples and on the inside of an RF cavity half cell was conducted recently. The transition temperature and RRR of these films have been measured. One drawback of cathodic arcs is the generation of droplets and macro-particles in the source plasma. We have installed a novel macro-particle filter to block these particles and transmit only the highly ionized plasma to the substrate surface. Surface inspection by SEM showed significant reduction of Niobium droplets and macro-particles, with the macro particle filter installed. SIMS analysis showed surface oxides were moderate compared to solid niobium and films made by other processes.

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