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Niobium surface modification in a microwave discharge MARIJA RASKOVIC, SVETOZAR POPOVIC, LEPOSAVA VUSKOVIC, Old Dominion University — Surface preparation techniques for Niobium superconducting RF cavities commonly employ chemical or electrochemical polishing. With wet chemical polishing and the final dry air treatment, the formation of a non-superconductive Niobium oxide layer is unavoidable since oxidation starts as soon as the chemical process stops. For that reason a dry surface modification is highly desirable. Plasma etching may provide a unique opportunity to explore oxide-free surfaces by directly testing a cavity surface after processing without exposure to air. We studied the effects of a cavity microwave discharge in Ar and Ar-Cl_2 mixtures on removal of oxide layer of an electrically biased Niobium samples. Results on discharge characterization during the process will be presented at the conference.

Svetozar Popovic
Old Dominion University

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