

Abstract Submitted
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Laser Processing on the Surface of Niobium Superconducting Radio-Frequency Accelerator Cavities SENTHILRAJA SINGARAVELU, Old Dominion University, MICHAEL KLOPF, GEOFFREY KRAFFT, Jefferson Laboratory, MICHAEL KELLEY, College of William and Mary — Superconducting Radio frequency (SRF) niobium cavities are at the heart of an increasing number of particle accelerators. Their performance is dominated by a several nm thick layer at the interior surface. Maximizing its smoothness is found to be critical and aggressive chemical treatments are employed to this end. We describe laser-induced surface melting as an alternative “greener” approach. Modeling guided selection of parameters for irradiation with a Q-switched Nd:YAG laser. The resulting topography was examined by SEM, AFM and Stylus Profilometry.

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