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Outgassing Measurements of Laser Engineered Copper Surfaces

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Laser Engineered Surface Structures (LESS) is a novel technology for reducing the Secondary Electron Yield (SEY) of metal surfaces, and has recently been investigated for mitigating the electron-cloud phenomenon in high-intensity particle accelerators such as the HL-LHC and the FCC at CERN.

Treatment with LESS increases the surface roughness, thus the outgassing of treated surfaces can be different compared to untreated ones. Pumpdown curves have been measured for copper samples with LESS in order to characterize water outgassing and estimating the effective surface area. The gas accumulation technique has then been used to identify whether LESS might trap ambient air, and to measure hydrogen outgassing. We report the results of these measurements, for different LESS treatment conditions.

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