Abstract Submitted
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Vacuum Compatibility of Laser-Sintered Metals[1] W.F. RIVERA, C. A. ROMERO-TALAMAS, E. M. BATES, W.J. BIRMINGHAM, University of Maryland Baltimore County, M. QUINLEY, S. WOODRUFF, J.E. STUBER, P.E. SIECK, P.A. MELNIK, Woodruff Scientific Inc — We present the design and results of a mass spectrometry system used to assess vacuum compatibility of selective laser-sintered parts. The parts are disks with a thickness of 0.20 cm and a diameter of 8.25 cm, and are made of aluminum, stainless steel, inconel, and titanium. From preliminary results, titanium had the lowest partial pressure for hydrogen. Outgassing from laser-sintered parts is compared against parts with similar surface area that are manufactured with traditional methods. Outgassing is also measured while the part is heated, emulating the conditions at the edge of high temperature plasma confinement chambers. Each part is placed on a heated container that can vary in temperature inside the mass spectrometers vacuum chamber. The partial pressures of elements up to 200 atomic mass units are analyzed to obtain outgassing data from each sample.

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