

Dust removal from surfaces in a low pressure environment

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Dust particles are ubiquitous on Mars and on the Moon and can constitute a potential hazard for space missions [1]. The microparticles can range in size from a fraction of a micron to several tens or hundreds of microns and are subjected to ionizing radiations coming from the sun and cosmic rays. Dust has the tendency to stick on surfaces thus posing several technical problems: it can interfere with the proper functioning of solar panels, imaging devices, or it can block the bearings, joints and movable parts of tools or machines. A technique based on pulsed plasma jet for removing dust from different types of surfaces in vacuum is proposed [2]. Simulations and experiments are underway to evaluate the impact of a plasma jet on microparticles in high vacuum and in CO₂ at a pressure of a few torrs.

[1] C.I. Calle, C.R.Buhler, M.R.Johansen, M.D.Hogue, S.J.Snyder, *Active dust control and mitigation technology for lunar and Martian exploration*, Acta Astronautica 69, 1082–1088 (2011).

[2] C.M. Ticos, I. Jecu, C. P. Lungu, P. Chiru, V. Zaroschi, A. M. Lungu, *Removal of Floating Dust in Glow Discharge Using Plasma Jet*, Applied Physics Letters 97, 011501 (2010).