

Abstract Submitted
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Polyvinylidene Fluoride Impact Charge Production After High Temperature Exposures¹ ALEX DONER, MIHALY HORANYI, University of Colorado, Boulder, JOHN FONTANESE, LASP — A thin permanently polarized film of a resin monomer, polyvinylidene fluoride (PVDF), produces a charge when struck with a fast moving dust particle. These films are used to measure the dust flux in space-like environments and have been used on many spacecraft. This experiment determined whether or not these films produce the same charge after they are exposed to temperatures up to 120 °C, the highest temperatures observed on the lunar surface. In order to determine this, a PVDF film was exposed to 120 °C for a cumulative period of 14 days and then tested first with a fast pulse high-power laser and then with actual dust impactors. The output signal amplitudes were compared with the relative laser pulse energy and the mass and velocity of the dust impactors. The results suggest that these films survive at 120 °C and may be a suitable detector to measure the interplanetary dust flux that bombards the lunar surface. These future dust flux measurements can help us further our understanding of planetary formation in our solar system as well as the dust lofting mechanisms that lift dust off of the lunar surface.

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