

Experimental Technique for Producing and Recording Precise Particle Impacts on Transparent Window Materials.

A new facility for making small particle impacts is being developed at NASA. Current sand/particle impact facilities are an erosion test and do not precisely measure and document the size and velocity of each of the impacting particles. In addition, evidence of individual impacts is often obscured by subsequent impacts. This facility will allow the number, size, and velocity of each particle to be measured and adjusted. It will also be possible to determine which particle produced damage at a given location on the target. The particle size and velocity will be measured by high speed imaging techniques. Information as to the extent of damage and debris from impacts will also be recorded. It will be possible to track these secondary particles, measuring size and velocity. It is anticipated that this additional degree of detail will provide input for erosion models and also help determine the impact physics of the erosion process. Particle impacts will be recorded at 90 degrees to the particle flight path and also from the top looking through the target window material.