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**Stardust Interstellar Preliminary Examination:
Laboratory investigation of impact features in
silica aerogel.**

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The NASA Stardust spacecraft collected Interstellar Dust in extremely low density silica aerogel during its mission. As well as collecting the particles for subsequent examination, the aerogel preserved the entrance tracks of the particles. The morphologies of these tracks can be used to estimate other particle properties, such as impact velocity, size and structure. To understand the response of aerogel to particles with different physical characteristics a number of experiments have been performed using the Heidelberg Van de Graaff electrostatic dust accelerator. Particles with differing densities and compositions (orthopyroxene, olivine, silica, latex) have been accelerated onto aerogel samples over a range of velocities and the track morphology investigated using electron microscopy or 3D laser scanning microscopy.

Here we present our latest progress and the results of our laboratory calibration campaigns, together with their implications for the sizes, impact velocities and structures of interstellar dust collected by the Stardust spacecraft.

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