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3D laser scanning microscopy of hypervelocity impact features in metal and aerogel targets

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The morphology of features generated by the hypervelocity impact of cosmic dust particles can reveal a great deal about the dust sizes, velocities, shapes, structures and even compositions. These features are currently the subject of investigation in the context of the Stardust mission [1]. Accurately measuring the morphology typically requires the use of scanning electron microscopy (e.g. [2]), optical microscopy (e.g. [3]) or scanning tunnelling x-ray microscopy (e.g. [4]). Here we present a comparison of 408 nm 3D laser scanning microscopy and SEM microscopy/MeX reconstruction when applied to crater morphology in metal surfaces, together with early results in the detection and analysis of craters and aerogel tracks using 3D laser scanning microscopy.

[1] Brownlee, D. E. et al. (2003) JGR 108, 8111/1–15. [2] Westphal, A. et al. (2002) MAPS 37, 855-865. [3] Burchell, M. J. et al. (2008) MAPS 43, 23-39. [4] Sandford, S. et al. (2008) Annu. Rev. Anal. Chem. 1, 549-578.

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