

Abstract Submitted
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Reconstruction of hypervelocity impact crater progenitors utilising experimental data and hydrocode modelling at micron-scales MARK C. PRICE, Centre for Astrophysics and Planetary Science, School of Physical Sciences, University of Kent, Canterbury, UK, ANTON T. KEARSLEY, IARC, Dept. of Mineralogy, Natural History Museum, London, UK, MARK J. BURCHELL, Centre for Astrophysics and Planetary Science, School of Physical Sciences, University of Kent, Canterbury — We have used the Ansys Inc. AUTODYN software to hydrodynamically model small particle impacts into aluminium foil under the conditions of the Stardust encounter with comet 81P/Wild 2 (i.e., normal incidence, 6.1 km s^{-1}). We compare results of impact models, based on carefully defined particle structures inferred from experimental data, with three-dimensional crater shapes reported from Stardust. This allows us to assess the extent to which the particle's structure (and composition) is reflected in the resulting impact feature. Our aim is to improve interpretation of comet Wild 2's dust characteristics, especially sub-grain dimensions, internal porosity and overall grain density. Here we present a simulation of the formation of a complex crater seen on Stardust foil C029W,1 and demonstrate that a reasonably simple model for the impactor results in a simulated crater morphology very consistent with the measured morphology.

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