

**Supplementary information**

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**Evidence of hydrogen–helium immiscibility  
at Jupiter-interior conditions**

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## SUPPLEMENTARY INFORMATION.

### Evidence of hydrogen-helium immiscibility at Jupiter-interior conditions

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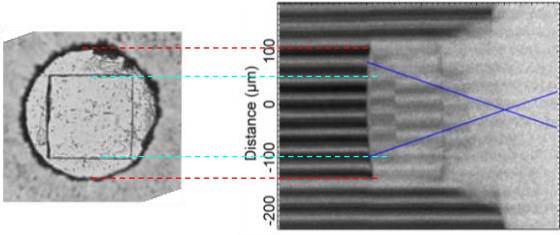
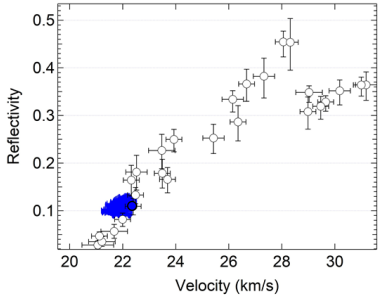
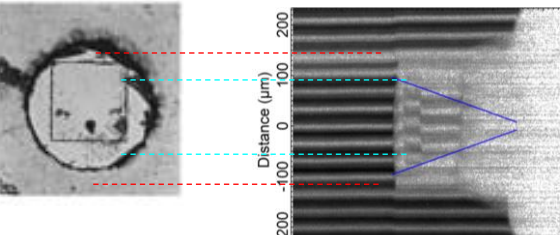
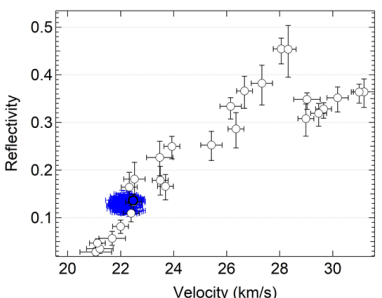
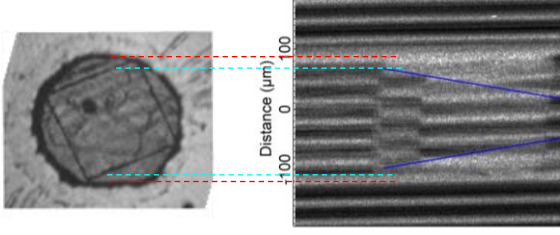
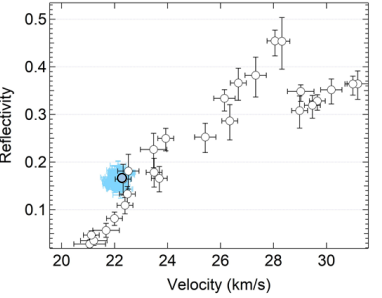
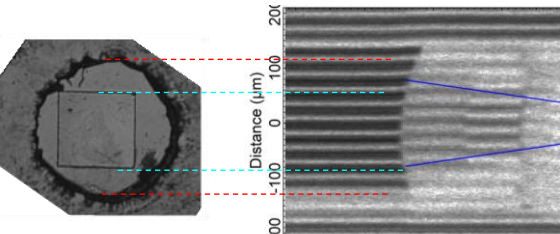
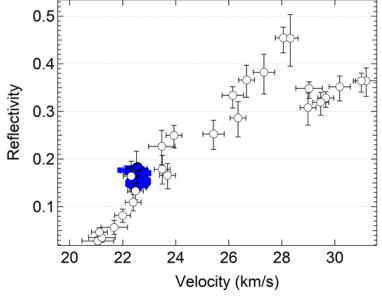
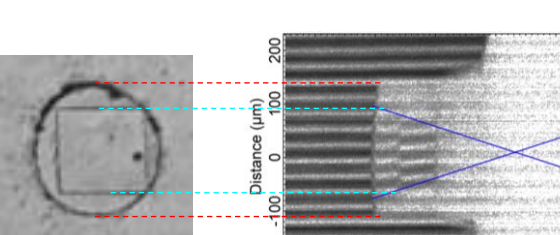
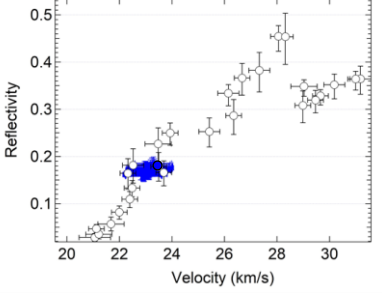
*2Lawrence Livermore National Laboratory, Livermore, California, 94550, USA*

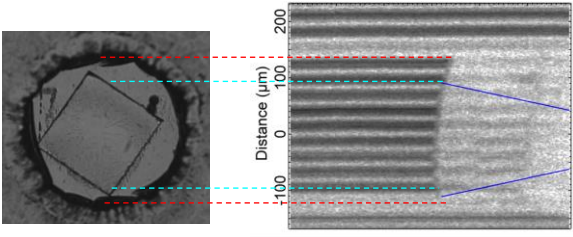
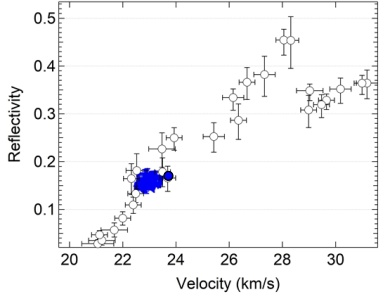
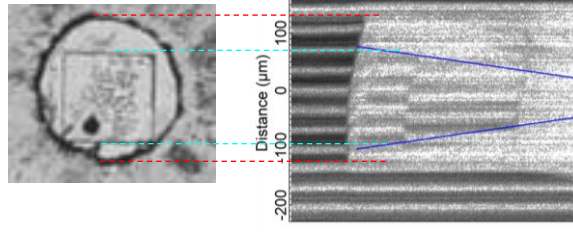
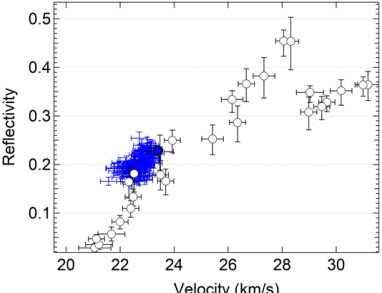
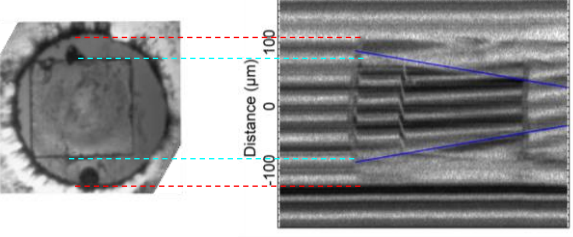
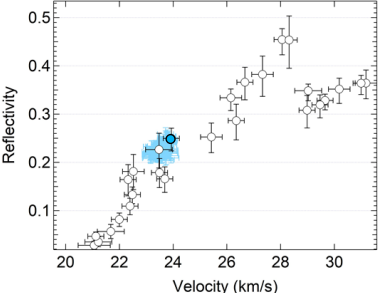
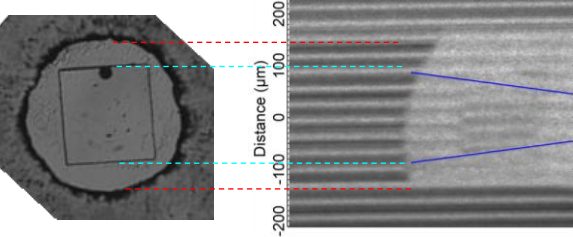
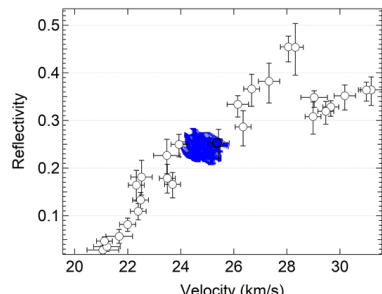
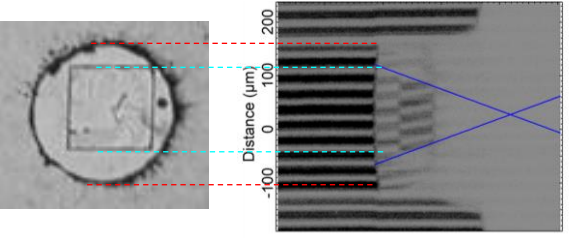
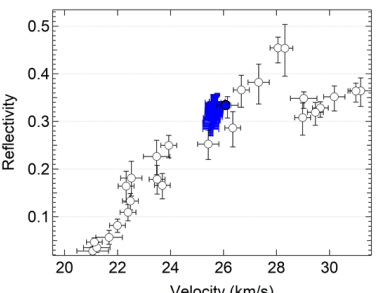
*3University of Rochester, Department of Mechanical Engineering, Physics and Astronomy, and Laboratory for Laser Energetics, Rochester, New York, 14623, USA*

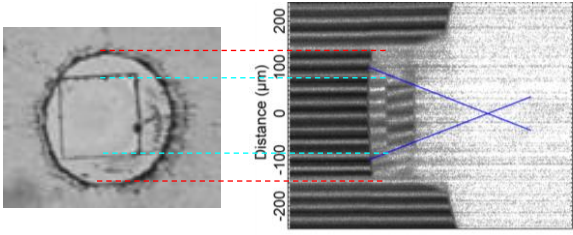
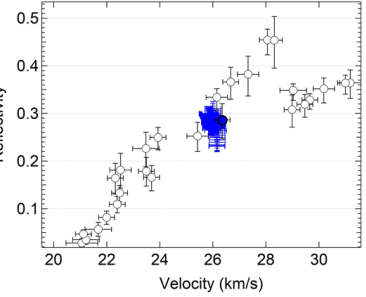
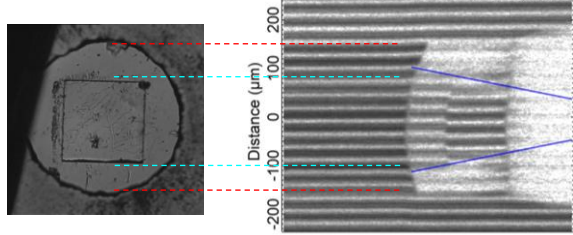
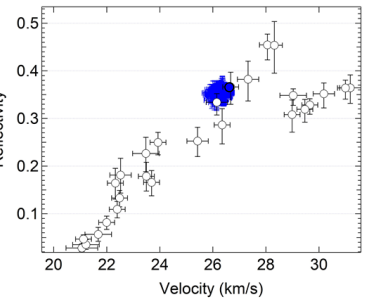
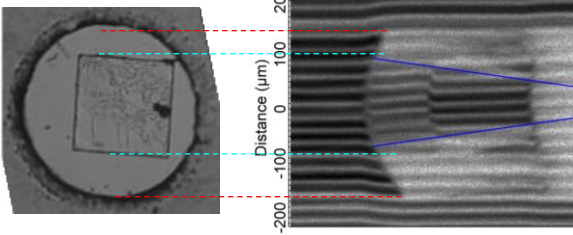
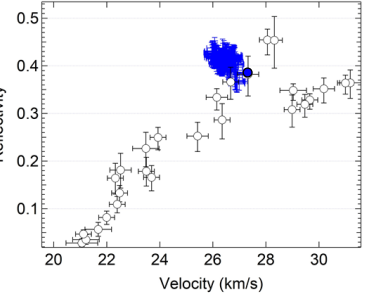
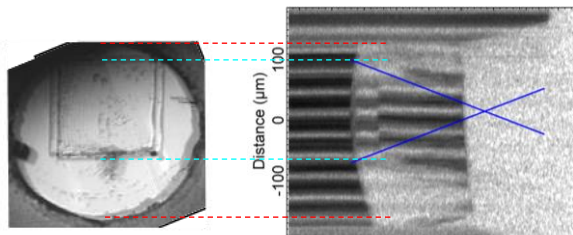
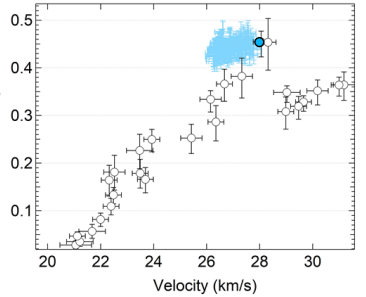
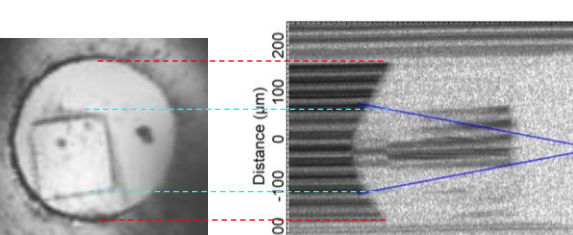
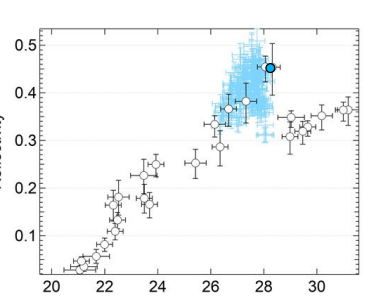
*4University of California, Berkeley, California, 94720, USA*

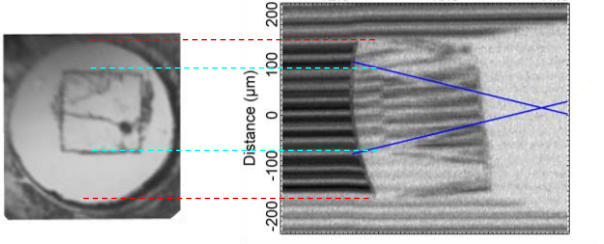
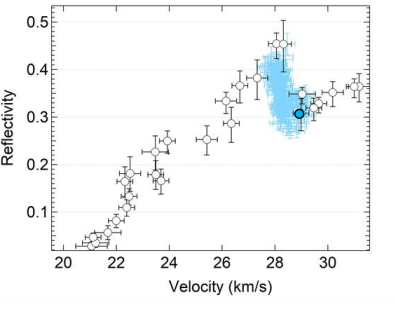
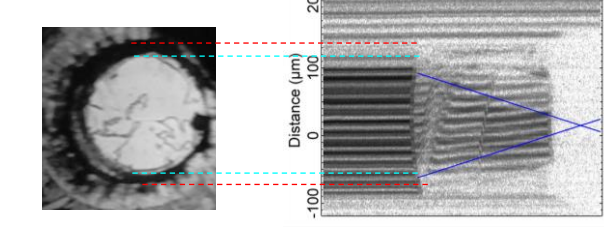
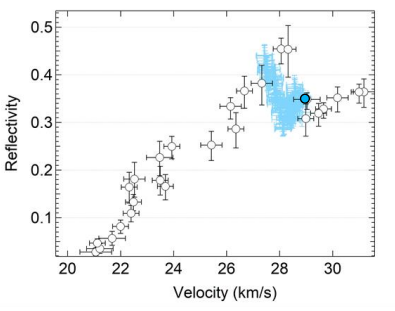
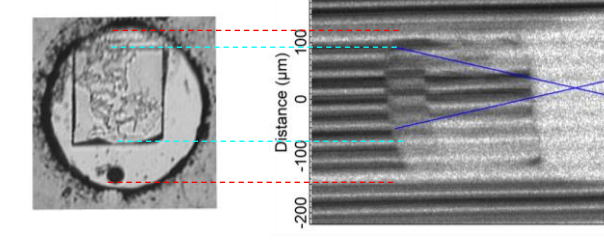
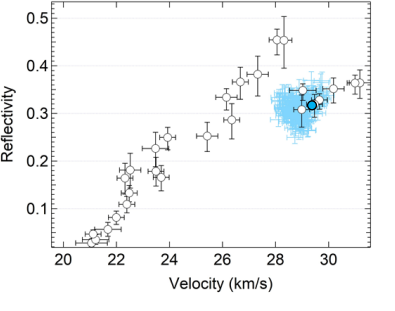
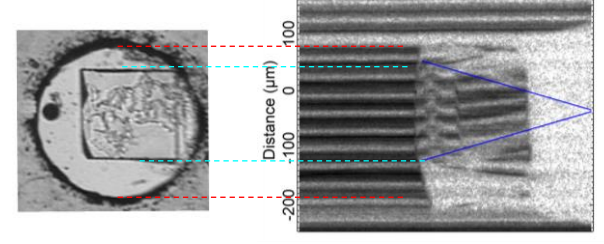
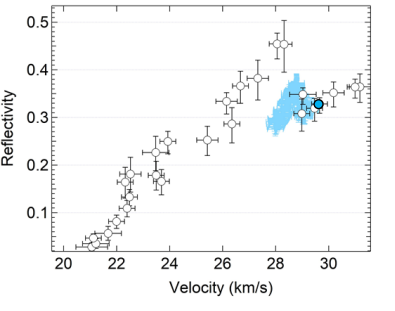
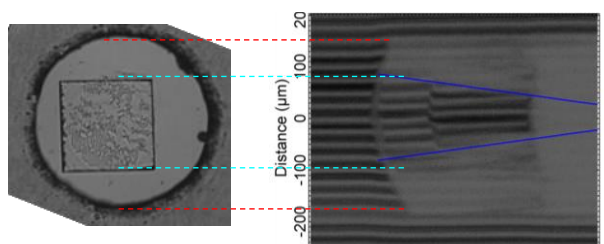
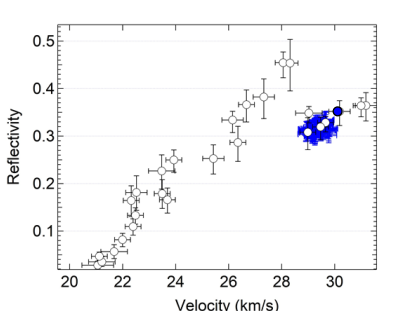
**Table of decaying shock analysis for all experiments.** Column 1: Shot number and the type of anvil window, diamond or sapphire, through which the VISAR measurements are made. Column 2: The sample photo and the VISAR image are shown. The red and light blue dotted lines are guides to the eyes indicating the gasket and quartz edges, respectively. On the VISAR image, the blue lines represent the propagation of the quartz edge disturbances that can perturb the reflectivity measurements at late time. Column 3: The reflectivity evolution versus shock velocity obtained from the decaying shock analysis is compared to the discrete data points curve obtained from the measurement at the quartz/H-He sample interface for all experiments. Dark or light blue color indicates that the reflectivity data are measured through a diamond or a sapphire anvil, respectively.

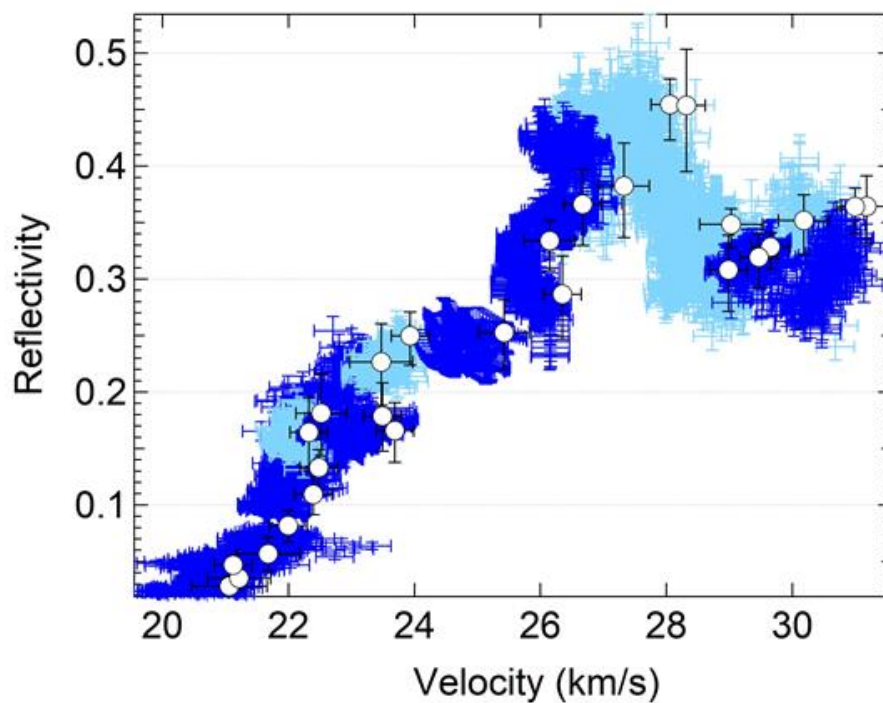
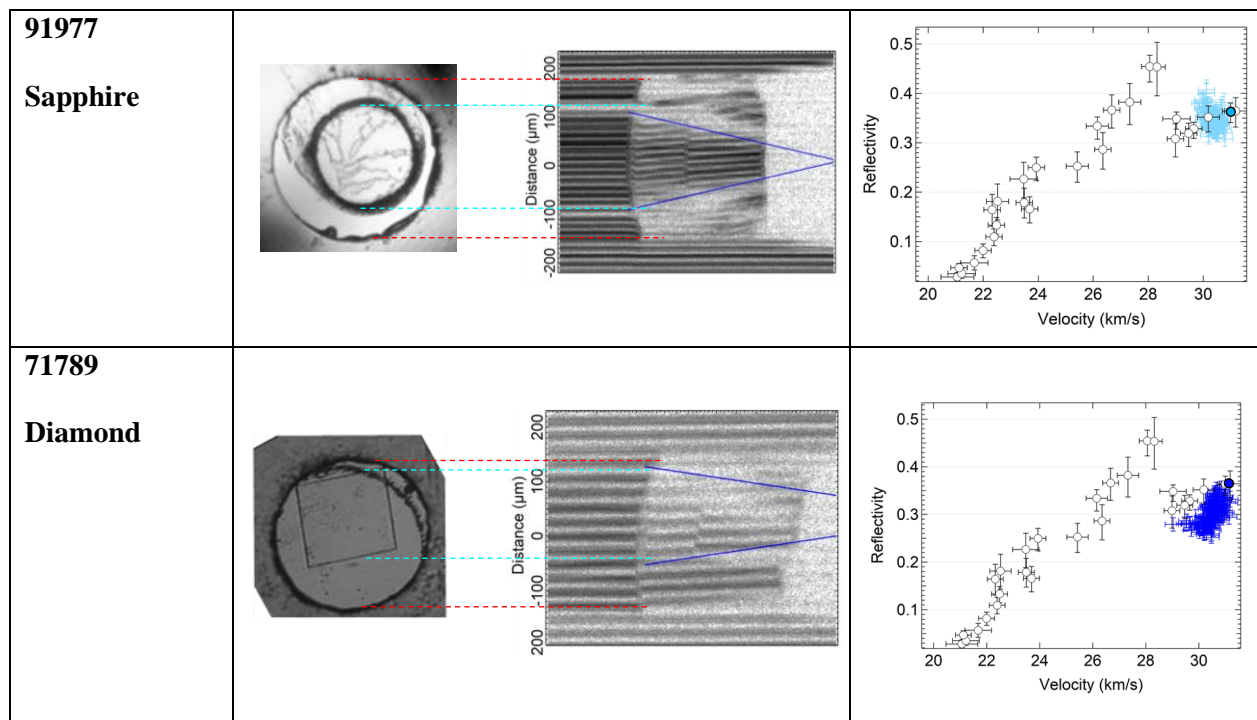
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<p><b>87363</b></p> <p><b>Sapphire</b></p>		
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<p><b>86357</b></p> <p><b>Sapphire</b></p>		
<p><b>71794</b></p> <p><b>Diamond</b></p>		



**Overview figure of the reflectivity versus shock velocity obtained from the decaying shocks of all experiments.** The dark and light blue indicates when the back anvil is a diamond or a sapphire, respectively. The open circles are data obtained at the quartz/H-He interface.