

SHOCK22 – Melia Kendall

Water in silicates: A combined shock and spectroscopy study

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Water is abundant in planetary building blocks. Two fundamentally important questions for understanding impact events and interpreting planetary evolution are 1) how does the incorporation of water into silicate materials influence physical properties during shock and 2) where do volatiles like water go during impact events? To this end, we present results from shock experiments on the compressed gas-driven gun housed at the Dynamic Integrated Compression Experimental (DICE) facility at Sandia National Laboratories for two samples: SiO_2 glasses with <1ppm OH and 1000ppm OH. Raman and IR data from recovered sample materials will be used to determine the degree of devolatilization that has occurred in these shock experiments. These combined datasets will permit us to evaluate both the effect of low levels of hydration on physical properties of silicates, as well as determine what happens to volatile species on impact.

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