

Laser shock compression in LFRC

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Shock compression is a major technique used for achieving high pressures dynamically. High-powered lasers are increasingly being used for dynamic loading of materials, especially for extreme high pressure. Ramp loading, a series of weak compress waves, is another advantage for laser-based dynamics, which can be realized easily by the laser pulse shape and can be applied to compress material in much lower temperature under exoplanetary condition. In this talk, we will present our shock loading and X-Ray diagnostics abilities in LFRC and our shock experiment results. Our research progress will also be mentioned, especially in laser shock compression of iron and ramp compression of Al to 420 GPa. Several problems in the mineralogy of Super-Earth planets will also be mentioned in the end of this talk.

Keywords: laser shock compression, ramp compression, High-powered lasers