

Abstract Submitted
for the SHOCK09 Meeting of
The American Physical Society

Shock temperature measurements of pre-compressed water using two-color streaked optical pyrometer¹ TOMOAKI KIMURA, NORIMASA OZAKI, TOMOYUKI TERAJ, TOMOKAZU SANO, KOHEI MIYANISHI, TAKASHI ENDO, TATSUYA JITSUI, AKIO HIROSE, TOMOYUKI KAKESHITA, RYOSUKE KODAMA, Grad. Sch. Engn., Osaka Univ., TAKUO OKUCHI, Inst. for Study of The Earth's Interior, Okayama Univ., KATSUYA SHIMIZU, Center for Quantum Science and Technology under Extreme Conditions, Osaka Univ., TAKAYOSHI SANO, YOUICHI SAKAWA, ILE, Osaka Univ., MASAHIRO IKOMA, Grad. Sch. Sci. and Engn., Tokyo Inst. Tech. — A coupling method of static pre-compression and laser-shock compression has been used to investigate off-Hugoniot states such as internal conditions of planets. This method has a possibility to generate lower temperature conditions than principal Hugoniot. In this work, shock temperature of a pre-compressed water has been experimentally obtained. We measured two-color emission from a shock wave driven into the pre-compressed water target using a streaked optical pyrometer. Using this method, it is possible to directly determine the shock temperature without any assumption of the emissivity of the shocked matter.

¹This research was partially supported by grants for the Core-to-Core Program from the JSPS and for the GCOE program, “Center for Electronic Devices Innovation,” from the MEXT.

Tomoaki Kimura
Graduate school of Engineering, Osaka University

Date submitted: 23 Feb 2009

Electronic form version 1.4