Abstract Submitted
for the SHOCK17 Meeting of
The American Physical Society

Time-Resolved Spectroscopy Observation regarding Synthetic Uranus at High Pressure and Temperature RYO HAZAMA, NORIMASA OZAKI, YOHEI FUJIMOTO, MIKA KITA, RYOUSUKE KODAMA, Graduate School of Engineering, Osaka Univ, MASANORI FUYUKI, Center for Teaching, Learning and Tech., Kio Univ, KOSUKE KUROSAWA, Exploration Res., Center, Chiba Inst., of Tech., TAKUO OKUCHI, Inst., for Study of the Earths Interior, Okayama Univ, TAKAYOSHI SANO, YOUICHI SAKAWA, Institute of Laser Engineering, Osaka Univ, KOHEI MIYANISHI, Photon Pioneers Center, Osaka Univ, MICHEL KOENIG, ALESSANDRA BENUZZI-MOUNAIX, ALESSANDRA RAVASIO, RICCARDO BOLIS, MARCO GUARDUAGLINI, LULI Ecole Polytechnique, PATRICE BARROSO, Paris Observatory — Icy giant planets, like Uranus and Neptune, are thought to consist of mixture of water, methane, and ammonia at high pressures and temperatures. In the 1980s the Voyager II mission revealed that both of Uranus and Neptune had unusual non-dipolar and non-axial magnetic fields. However, the cause of the magnetic fields is still a major unresolved issue in planetary science. It is necessary for solving this issue to better understand the behavior of the molecular mixture at the planetary interior conditions. We performed laser-shock experiments on molecular mixture samples to simulate the interior conditions of the planets in laboratory. The mixtures were shock-compressed up to ˜80 GPa and 4500 K. We measured the self-emission spectra from the compressed samples. We here discuss the line spectra in the blue region by comparing the experiment with theory.

Ryo Hazama
Graduate School of Engineering, Osaka Univ

Date submitted: 28 Feb 2017 Electronic form version 1.4