

# The 435th Geodynamics Seminar

## Hydrogen bond symmetrization of ice and hydrous phases

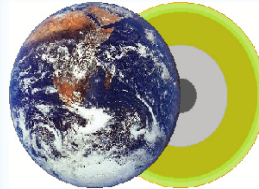
Dr. Jun Tsuchiya (Associate Professor, GRC)

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Research Bldg 1, Ehime Univ.

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場所: 愛媛大学 総合研究棟 I  
4階共通会議室



### Abstract

Determination of the structure, physical properties, and phase relations of high-pressure ice is important for physical, geophysical and planetary sciences. Hydrogen bonded molecular phases ice VIII and ice VII have known to transform to an atomic crystal phase ice X at  $\sim 60$ - $100$  GPa by the hydrogen bond symmetrization. We have reported the hydrogen bond symmetrization occurs also in dense hydrous minerals such as  $\delta$ -AlOOH, phase D ( $\text{MgSi}_2\text{O}_6\text{H}_2$ ) and phase H ( $\text{MgSiO}_4\text{H}_2$ ) at  $\sim 30$  GPa. We have shown that their compressibilities, vibrational and elastic properties are significantly changed by the hydrogen bond symmetrization. Here, I review these behaviors in high pressure ice and hydrous minerals investigated by first principles calculations and compare them with the recent results of the high pressure experiments.

詳細は当センターホームページ: <http://www.grc.ehime-u.ac.jp/> をご覧ください

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