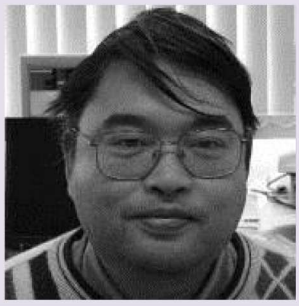



# Kenji MARUYAMA, Ph.D.

Associate Professor
Program: Fundamental Sciences
Area: Chemistry
Undergraduate: Dept. of Science


## Research Fields of Interest

### Research Field

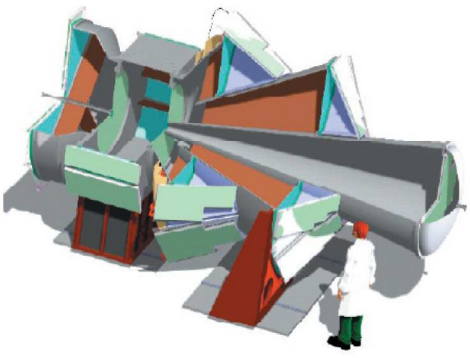
- Structure of liquids, espetially its change around the phase transition at high temperature and at high pressure: liquid chalcogen — semiconductor-metal liquid Hg — metal-insulator (short- and intermediate-range structure)
- Structure of fl ucutuation (long-range structure): concentration-concentration fluctuation in thealcoholic slutions
- Constraction of 3-dimentional models of liquid structure and their visualization

### Experimental Method and Instruments

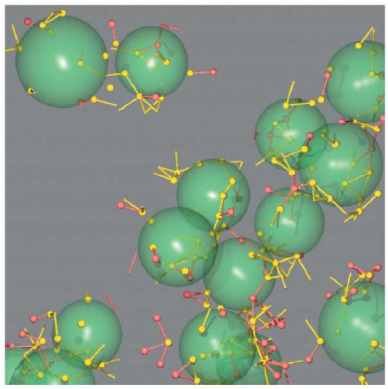
- Neutron and X-ray scattering: Constracting a new high-intensity neutron total scattering spectrometer, NOVA, at the strong pulsed neutron source J-Parc
- High energy X-ray scattering, SPring-8
- Quasielastic neutron scattering

### Method of Structural Analysis

- Development of reverse Monte Carlo method for constructing 3 dimentinal structure models and appling it to complex liquids, such as liquid chalcogen including covalent bonds
- Investigation of the intermediate-range structure by using the void structure
- Investigation of large scale structure, such as concentration-concentration fl uctuation near the critical point, by using Monte Carlo, reverse Monte Carlo, and so on.
- Analysis of dynamics in the alcoholic solutions by using relaxing cage model



High intensity neutron scattering spectrometer, NOVA



## Education

1991: Doctoral Sci. Degree, Kyoto University, Japan
1988: Master Sci. Degree, Graduate School of Science, Kyoto University, Japan
1986: Bachelor Sci. Degree, Graduated from Department of Physics, Kyoto University, Japan

## Major Publications

### Papers

**Local structure**

[1] "Static and dynamic structures of liquid GeTe mixtures" Yukinobu Kawakita, Yasuhiko Kato, Shuta Tahara, Hiroyuki Fujii, Shin'ichi Takeda and Kenji Maruyama J. Non-Cryst. Solids, 353 (2007), 1999-2003.

[2] "Preparation of TiO2-Na2O glass by sol-gel method and structural characterization" Toru Sato, Masakatsu Misawa, Kenji Maruyama and Keiji Itoh J. Non-Cryst. Solids, 353 (2007), 2832-2836.

[3] "Local structure of liquid Rb-Se mixtures near the miscibility gap" K. Maruyama, H. Hoshino, H. Ikemoto, T.Miyanaga, H. Endo, J. Non-Cryst. Solids, 353 (2007), 3017-3021.

[4] "Structural study of molten Ag halides and molten AgCl-AgI mixture" Y. Kawakita, T. Enosaki, S. Takeda, K. Maruyama, J. Non-Cryst. Solids, 353 (2007), 3035-3039.

**Alcoholic aqueous solution**

[5] "Hydrophobic Hydration and Anomalous Excess Partial Molar Volume of tert-Butyl Alcohol-Water Mixture Studied by Quasielastic Neutron Scattering" Masaru Nakada, Osamu Yamamuro, Kenji Maruyama, and Masakatsu Misawa J. Phys. Soc. Jpn., 76 (2007), 054601.

[6] "Mass-fractal clustering and powder-law decay of cluster size in 1-propanol aqueous solution" M. Misawa, I. Dairoku, A. Honma, Y. Yamada, T. Sato, K. Maruyama, K. Mori, S. Suzuki, and T. Otomo J. Chem. Phys. 121 (2004) 4716-4723.

[7] "Quasielastic neutron scattering investigation of motion of water molecules in n-propyl alcoholwater mixture" Masaru Nakada, Kenji Maruyama, Osamu Yamamuro, and Masakatsu Misawa J. Chem. Phys. 130 (2009), 074503

**Void and Intermediate-range structure**

[8] "Short- and Intermediate-Range Structures of Liquid Rb-Se Mixtures" Kenji Maruyama, Hirohisa Endo and Hideoki Hoshino J. Phys. Soc. Jpn., 74 (2005), 3213-3220

[9] "Short- and Intermediate-Range Order in Liquid Bi-BiBr3 Mixtures: Importance of Voids" Kenji Maruyama, Hirohisa Endo, Hideoki Hoshino J. Phys. Soc. Jpn., 76 (2007), 024601.

[10] "Voids and Intermediate-Range Order in Network-Forming Liquids: Rb20Se80 and BiBr3" Kenji Maruyama, Hirohisa Endo, and Hideoki Hoshino J. Phys. Soc. Jpn., 76 (2007), 074601.

[11] "Void distributions in liquid BiBr3" K Maruyama, H Endo, H Hoshino, Y Kawakita, S Kohara and M Itou J. Phys.: Conf. Ser. 98 (2008), 012019.

[12] "Chain Geometries around Voids in Liquid Te" Kenji Maruyama, Hirohisa Endo, and Hideoki Hoshino J. Phys. Soc. Jpn. 77 (2008), 034603

[13] "Void structure and intermediate-range fluctuations in the metal-nonmetal transition range in expanded liquid Hg" Kenji Maruyama, Hirohisa Endo, Hideoki Hoshino, and Friedrich Hensel Phys. Rev. B 80 (2009), 014201

[14] "Icosahedral ordering in liquid iron studied via x-ray scattering and Monte Carlo simulations" Masanori Inui, Kenji Maruyama, Yukio Kajihara, and Masaru Nakada Phys. Rev. B 80 (2009), 180201