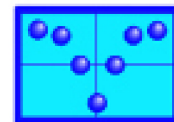
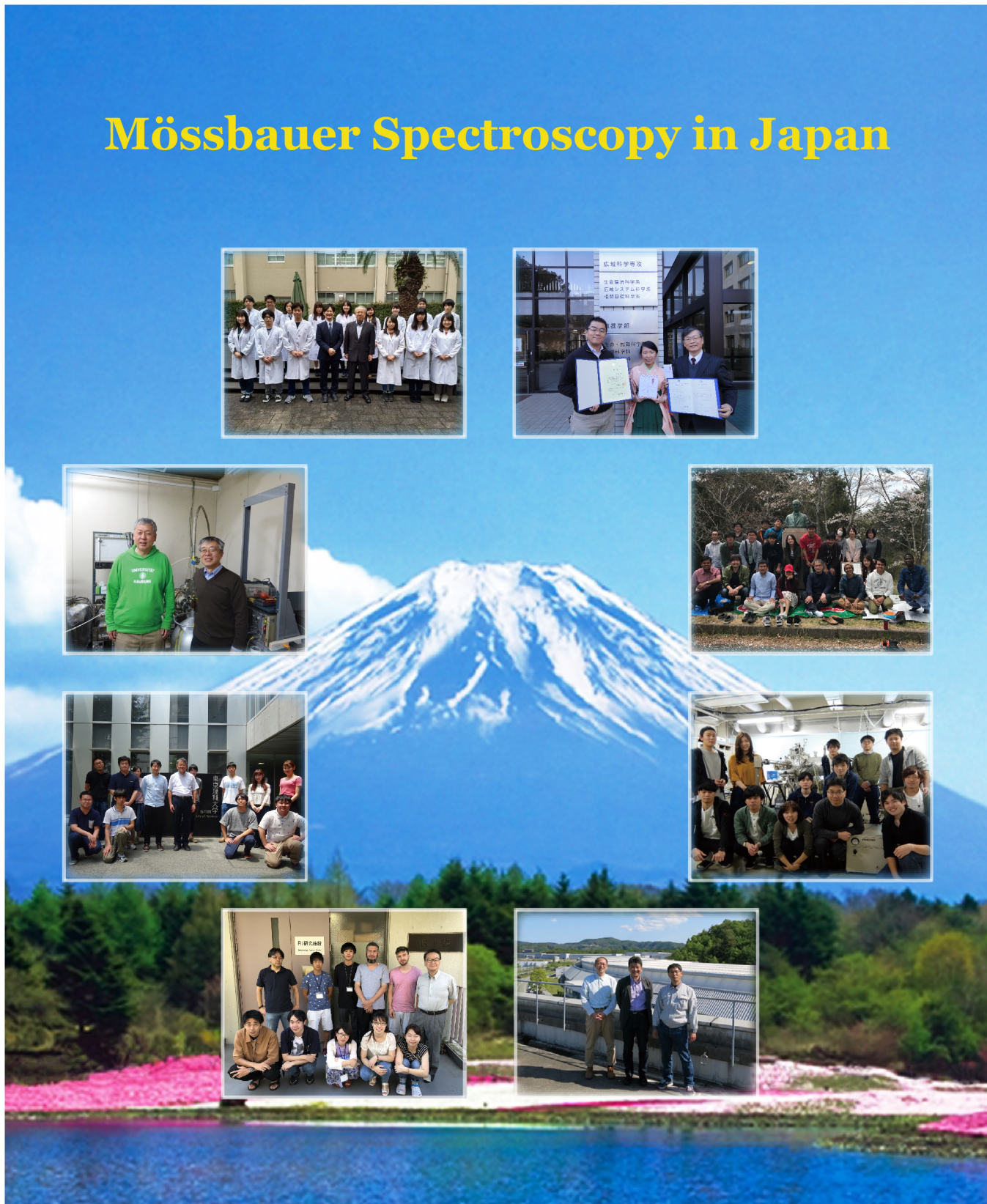
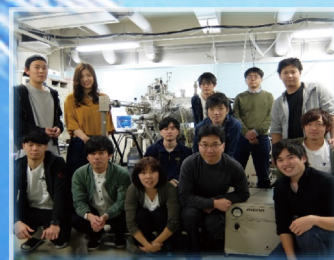
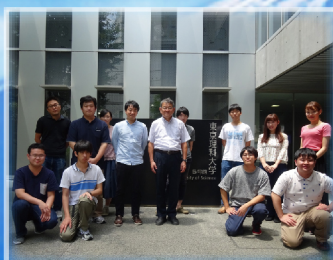
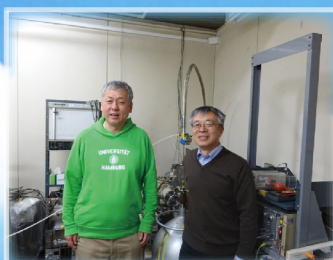


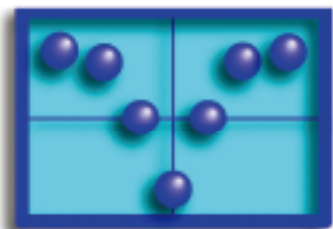
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Mössbauer Spectroscopy in Japan





MÖSSBAUER SPECTROSCOPY NEWSLETTER

September 2018

Mössbauer Spectroscopy in Japan

This issue of the Newsletter features reports from 8 active Mössbauer research laboratories in Japan. The reports appear in alphabetical order. The composition of the Japan Mössbauer Spectroscopy Forum and the program of the organized latest symposium are listed after the laboratory reports.

HIROSHIMA UNIVERSITY
Radiation Reaction Chemistry Group
Natural Science Center for Basic Research & Development
Department of Chemistry, Graduate School of Science
Higashi-Hiroshima



Prof. Nakashima and his group member

Names of Researchers

Professor Satoru Nakashima – Head of Laboratory
Ms. Saki Iwai – Graduate Student

Description and Areas of Research

The Radiation Reaction Chemistry Group at Hiroshima University make a study in the field of coordination chemistry and radiochemistry, especially, on the spin-crossover phenomenon

of assembled Fe(II) complexes, chemistry of biosmocenes, the separation of actinides from lanthanides, and environmental radioactivity. Their currently working are in the following areas:

- Spin-crossover Phenomena of Assembled Fe(II) Complexes. Fe(II) spin-crossover complexes have the ability to switch between two spin states by temperature,

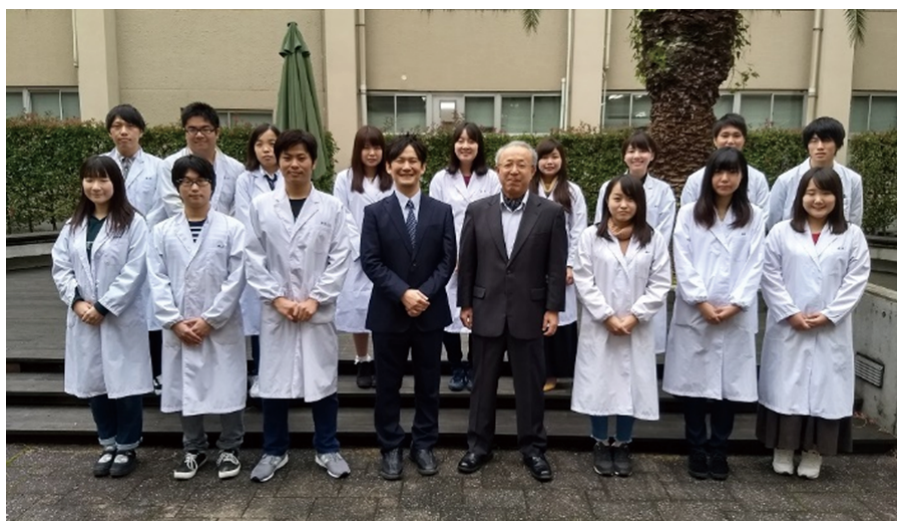
pressure, or light. The group is interested in the phenomena of the porous self-assembled complexes. The group succeeded in changing the spin state (SCO-on/off) by desorbing and adsorbing guest molecules. The group revealed the important role of local structure around iron atom on the SCO-on/off. The use of DFT calculation explained that, in the shortening of Fe-pyridine bonds when changing from HS state to LS state, the pyridines of propeller type can approach the iron atom with smaller steric hindrance than those of parallel and distorted propeller type complexes;

- Chemistry of Biosmocene. The group had studied electron transfer in mixed-valence binuclear ferrocene derivatives using

Mössbauer spectroscopy. The group is now studying the chemistry of mixed-valence biruthenocene and biosmocene derivatives by using NMR and XPS;

- Solvent Extraction Separation of minor actinides from lanthanides is important for the safe disposal of high-level radioactive waste. The separation, however, is not easy, because the chemical behavior is similar to each other. The group studies the separation experimentally and theoretically;
- Environmental Radioactivity. The group investigates environmental radioactivity around radiation facility and migration of radioactive materials from Fukushima Daiichi Nuclear Power Plant.

KINDAI UNIVERSITY
Environmental Materials Science Lab.
Department of Biological and Environmental Chemistry
Fukuoka, Japan



Prof. Nishida, Prof. Oka, Mr. Fujita, and Ms. Masuda are respectively 5th, 4th, 2nd, and 6th from the left in the front row. The others are students (2017)

Names of Researchers

Professor Tetsuaki Nishida (invited since 2016)
 Associate Professor Nobuto OKA
 Mr. Yuki Fujita (Graduate Student)
 Ms. Sayaka Masuda (Graduate Student)

Keywords

Conductive Ceramics, Photocatalysts, Water Decontamination, Rechargeable Batteries, Solar Cells, Computational Materials Design

This group develops the novel functional materials for decreasing the energy usage and environmental load. They focus on the ceramics (e.g. glass and pottery) and polymer gels, which are familiar materials in our life. And they design novel functionalities by using these materials. Mössbauer spectra provide valuable information for their research, such as concerning the local structure constituting the 3D-network of inorganic glasses.