

## PREFACE

Following the tradition set by previous meetings, the 19th International Conference on Laser Spectroscopy (ICOLS2009) provided a tranquil and remote location for researchers to discuss the latest developments and applications of laser spectroscopy. It was held during 7-13 June 2009 at the Kussharo Prince Hotel in shore of Lake Kussharo in the Akan National Park, which provides quiet environment and natural wonder of forests, caldera lakes, mountains and an active volcano. This was the first ICOLS to be held in Japan, previous meetings having been in Vail, Megève, Jackson Lake, Rottach-Egern, Hot Springs, Capri, Hangzhou, Innsbruck, Snowbird, Palm Cove, and Telluride.

The conference was attended by 153 delegates from 19 countries including, Austria, Australia, Brazil, China, Denmark, France, Germany, Israel, Italy, Japan, Netherland, New Zealand, Russia, South Korea, Sweden, Switzerland, Taiwan, United Kingdom, and United States. The scientific program included 11 topical sessions with 32 invited talks including 2 “selected poster” presentations and two poster sessions with a total of 112 posters. In these proceedings we gather a collection of the invited talks and “selected poster” presentations from ICOLS2009.

Subjects covered at the conference included

- Atomic and Molecular Laser Spectroscopy
- Precision Measurements, Clocks and Space
- Laser Cooling and Trapping
- Ultrafast spectroscopy, High Fields and Control
- Atom Optics and Interferometry
- Bose-Einstein condensation and degenerate Fermi Gases
- Quantum and Nonlinear Optics
- Quantum Information and Control
- Novel Applications of Laser Spectroscopy

The invited talks were grouped under the headings of Quantum Information & Spectroscopy, Precision Measurement & Atomic Clocks, Quantum Optics & Quantum Information, Cold Molecules, Frequency Comb & New

Laser Sources, Atom Manipulation, Bose-Einstein Condensation, Optical Lattice & Fermion, Novel Applications, and Hot Topics.

The conference also incorporated a variety of social programs, including the traditional Wednesday afternoon excursion (a hiking in Shiretoko Five Lakes, Oshinkoshin Fall, and a cruise on Shiretoko), barbeque lunches and afternoon short trip to Wakoto Peninsula, Kushiro River, Sunayu (sand hot springs), Kawayu Onsen Area (many hot springs) and Mt. Iou (quasi-active volcano), where many of the delegates experienced the untouched nature of Shiretoko and Ainu folklore. The Banquet served regional dishes and fresh seafood from Okhotsk Sea. An after dinner talk was given by Prof. Takuma, who addressed a long history of ICOLS and memorable recollections.

We thank all the participants for making ICOLS2009 both memorable and exciting. We also thank the Program Committee and the Steering Committee for their expert help and advices in putting together an outstanding scientific program. We are indebted to our financial sponsors listed on the next page. Finally, we would like to thank those people in the background in ensuring that the ICOLS2009 to be a successful event. We thank Saki Takeshige for her devoted support in contacting speakers before and after the ICOLS2009 and gathering these Proceedings in shape, Shoko Okudaira and the other staffs and students for smooth running of the conference, and Takaaki Iwamoto and other staffs of the Kussharo Prince Hotel for their warm hospitality and dedicated support of the conference.

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September 2009