13th International Clay Conference (AIPEA)

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The 13th International Clay Conference (ICC) was held in Tokyo, Japan, from August 21 to 28, 2005, on the campus of Waseda University in central Tokyo. The conference was organized under the auspices of the Association Internationale pour l'Étude des Argiles (AIPEA; http://aipea.org) in conjunction with the 49th annual meeting of the Clay Science Society of Japan. The theme for this conference was "Claysphere: Past, Present and Future." This quadrennial conference brought together 396 participants from 36 countries. The keynote lecture by Prof. Akihiko Yamagishi entitled "Chiral Aspects of Clay Minerals" presented the remarkable conclusion that smectites can exhibit chiral discrimination when the interlayer space has been modified by chiral ionic molecules. An additional 15 invited symposia presentations and 331 invited and volunteered oral and poster presentations in 17 general sessions (http://wwwsoc.nii.ac.jp/cssj2/ 13ICC/) were made. The Clay Science Society of Japan published and distributed to all 15 participants a supplement to their journal *Clay Science* (volume 12) containing all symposia papers. About 60 papers will be published in the Proceedings Volume. At the conclusion of the meeting, the organizers held the First ICC Satellite Symposium for Young Scientists on the campus, as well as the International Symposium on Physics and Chemistry of Smectites.

FIGURE 1 Some of the delegates who participated in the mid-week field trip to Nikko.

Each morning the conference began with a series of symposium talks. These covered a variety of fields including interstratified minerals, exfoliation, advanced materials, advanced characterization of clay structures and reactivity, and clay polymers and nanocomposites. These talks covered current applications in fields ranging from nanotechnology to medicine to industry. The morning symposia were followed by oral presentations in the general sessions covering the teaching of clay science, clays in geology, the crystal chemistry and structure of clays, the synthesis of clays, the physical and chemical properties of clays, the simulation and characterization of clays, clays in industry, waste management and clay barriers and civil engineering, clays and environment, clays and human health, the clay–biology interface, soil and non-crystalline clays, layered double hydroxides and anionic clays, activated clays and porous materials, and clay–organic intercalation compounds. Each day ended with a two-hour poster session.

The traditional mid-week break consisted of a field trip to the Nikko area to visit some local cultural spots, including the Kegon waterfalls and the Toshogu shrine. Four busloads of enthusiastic participants enjoyed the two-hour drive up the switchback road to visit the falls; unfortunately the fog was so thick we could only hear the waterfalls. The shrine offered a perfect spot for a group photo (FIG. 1). The conference featured a banquet on Friday evening. Awards and medals were presented at the closing ceremony on Saturday morning. This year's Bradley Award winner was Javiera Cervini-Silva (USA). The AIPEA Diplomas for Fellowships were given to Dr. José Julien Fripiat (France) and Dr. José Serratosa (Spain). AIPEA Medals for excellence in clay science, sponsored by Sociedad Española de Arcillas, were given to Dr. Eduardo Ruiz-Hitzky (Spain) and Dr. Stephen Guggenheim (USA).

WORKSHOPS AND FIELD TRIPS

A premeeting workshop entitled "Bio-clays and Bio-mineralization" was organized by Dr. Kazue Tazaki from Kanazawa University and was cosponsored by the 13th ICC and the International Year of Planet Earth (IYPE) of IUGS. This workshop was designed to bring participants to view biomineralization in action through visits to hot springs where microbial mats and bio-clays in lagoonal sediments were observed. The talks and posters were complemented by stops at local ceramic and pottery factories, historical Japanese gardens, and the Kanazawa Castle. Participants praised Dr. Kazue for the informative and experiential character of the workshop (FIG. 2).

One of us, DBA, took part in a premeeting field trip—"Bentonite resources of Northern Honshu"—guided by Dr. Tetsuichi Takagi

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to keep library prices low enough so that libraries can afford to purchase GSW and at the same time provide the participating publishers with sufficient compensation through royalties that they can afford to keep publishing if print and individual electronic subscriptions decrease. For this reason, GSW is limiting its rate of growth until it is more established. After weighing many factors, including advice from the Library Advisory Committee, GSW will not add new journals until mid-2006. Other publishers are seriously interested but are waiting until the first publisher royalty payments are made to decide if it is economically feasible for their journal to join. The first priority when new journals are added will be to fill specific discipline areas. GSW is especially interested in journals covering structure and tectonics, hydrology, geophysics, and surficial processes. We are currently working on a separate linking arrangement with open-access geoscience journals.

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Member of Board of Directors, GSW

FIGURE 2 Prof. Tazaki (hat) discussing biomineralization with participant. PHOTO DR. RENATA JACH, POLAND

(Geological Survey of Japan) and Dr. Masakazu Ito (Kunimine Industries Co. Ltd.) with the assistance of Motoki Minami and Ken-Ichi Mogi (Kunimine Industries Co. Ltd.). The first day, en route to Zao City, we stopped at Kuroiso to visit the active and well-equipped laboratory of Kunimine Industries. This laboratory develops and performs quality-control analyses of the mined product for Kunimine Industries. The day concluded with a stay at the Miyagi Zao Royal Hotel, with traditional Japanese hospitality, excellent food, and beautiful hot spring baths.

Day 2 was dedicated to the study of the main geological aspects of three bentonite mines and to collecting samples. The first mine was the Dobuyama open pit of Kunimine Industries. Its bentonite is formed mainly of Ca-smectite (with subordinate opal, quartz, and zeolite). The parent rocks were Upper Miocene rhyolitic lapilli tuffs, and alteration was produced by hydrothermal activity associated with rhyolite intrusion. The second mine visited was the Kawasaki open pit of the Kawasaki Mining Co. Ltd. Its bentonite beds are formed mainly of Na–Ca-smectite (with subordinate opal-CT, quartz, and zeolite). The parent rocks were two horizons of thick felsic tuff beds intercalated in alternating Middle Miocene sandstones and siltstones. These bentonites are considered to have formed by diagenesis.

The third mine was the largest underground bentonite mine in Japan—the Tsukinuno mine of Kunimine Industries Co. Ltd. This sophisticated underground mine is accessible by ample tunnels in which modern jeeps can circulate easily. Its bentonite beds are composed of Na-smectite (with subordinate quartz, feldspar, illite, calcite, and zeolite). The parent rocks were felsic tuff beds intercalated in Middle Miocene hard shale. The bentonite beds 29 (7 m) and 31 (~2.5 m) are the main layers mined. We completed the day with a tour of the modern Aterazawa factory and dined at the Hotel Symphony on a superb Japanese banquet hosted by Mr. Toshiaki Kawashima, president of Kunimine Industries. The excursion ended with a visit to the most beautiful active volcano at Zao (FIG. 3), a reminder of the volcanic source of the bentonite deposits.

Following the conference, JBP participated in field trip 2—"Clays in Active (Hachimantai) and Fossil (Kuroko Deposit) Hydrothermal Systems, Northern Honshu." Dr. Katsumi Marumo from the Geological Survey of Japan/Advanced Industrial Science and Technology (AIST) and Prof. Yohei Ishikawa from Akita University led the field trip. The trip started in Morioka (~600 km north of Tokyo), and in the geothermal area we looked at hot springs, their deposits, and active geothermal power plants. We also visited the Matsuo neutralization plant built to mitigate the acid mine drainage problem ensuing from the old Matuso sulfur mine. The day ended at Kosaka Town, site of the main Kuroko deposit mining company (Kosaka Smelting and Refinery Co. Ltd.) and mine office building. The last mine closed in 1990, and the smelter now processes computer parts to recycle metals. Kosaka is also the host of the Japan International Cooperation Agency (JICA) training programs in mining technology.

On the second day, we visited several outcrops of saprolite associated with the Kuroko deposits, where we collected clay minerals, including excellent specimens of smectite and kaolinite. Walking by rice paddies and up logging roads, we viewed Middle Miocene deposits related to fossil seafloor hydrothermal systems, which had contained rich reserves of copper. The Kuroko

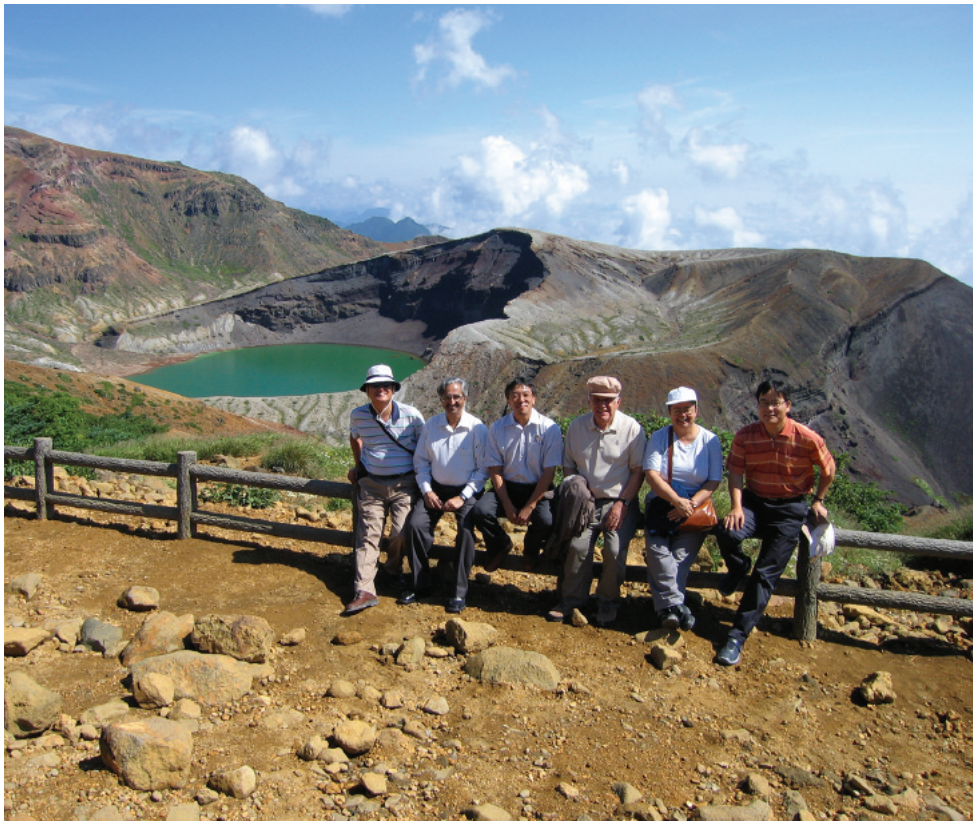

FIGURE 3 Panoramic view, showing the main geomorphologic features of the active volcano at Zao and participants in the F1 field excursion. PHOTO DR. SEONG-WAN PARK, KOREA

(meaning black ore) deposits were, at one time, the largest copper mines in the world. Understanding their nature is important to current studies of modern seafloor systems. The day ended at Lake Towada National Park where we visited the crater lake. Accommodation at the Towada Hotel, a traditional Japanese lodging, was superb with excellent food, wonderful hot baths, and breathtaking views. We returned to Tokyo the next day on the "bullet" train.

The next ICC meeting will be held in Italy in June 2009 and will be hosted by the Italian Clay Society under the leadership of Dr. Saverio Fiore.