

## Flow-based analysis topics as reported in the Symposium on Frontier Research Project: Materials Development for Environment, Energy and Information

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The Symposium was held at Aichi Institute of Technology in Yakusa, Toyota, from October 11-13, 2006. It was the 2<sup>nd</sup> (and closing) Symposium organized within the framework of the five-year **Frontier Research Project on Materials for the 21<sup>st</sup> Century -Materials Development for Environment, Energy and Information** partly supported by the Japanese Ministry of Education, Culture, Sports, Science and Technology. The research project activities were focused on three principal themes backed by appropriate research groups, namely: **Environment and Materials Group** (led by Professors T. Sakai and M. Inagaki); **Energy and Materials Group** (led by Professors T. Nakajima and M. Inagaki) and **Information and Materials Group** (led by Professors S. Ochiai and H. Furuhashi). The research groups involved Japanese scientists from Aichi Institute of Technology as well as from other universities and industry sectors of Japan; furthermore several overseas scientists were invited to collaborate with each the above groups. The international collaborators came from China, Canada, Slovenia, France, India, Korea, Poland, Czech Republic and Thailand. The **Environment and Materials** group was joined by **Kate Grudpan** (Chiang Mai University, Thailand) and **Miroslav Polasek** (Charles University, Czech Republic). This Symposium was a venue for the researchers (including students, both undergraduate and graduate) involved in the Project to report and to discuss the progress of their research activities and to prepare the final Project report in due time.

The Symposium was opened by Professor **Inagaki** followed by the group leaders presenting their summarizing "Activity Reports". It was observed that the Project had succeeded in good progress as documented by various kinds of outputs including a number of domestic and international publications, potential patent, and human resource development (in various levels: Bachelors', Masters', doctorates and postdocs).

The Symposium program was arranged in various sub-sessions: **Zero emission analysis**, **Environment analysis**, Recent topics on carbon materials, Fluorine chemistry to battery materials, Nonlinear optical materials I & II, Photocatalysts and their performance, Fluorination and CVD techniques, and Carbon electrodes.

Researches in **Flow-based techniques** were reported in the sub-sessions on **Zero emission analysis** and **Environment analysis** chaired by Professor **Sakai**. In the beginning of the session, **Kate Grudpan** (on behalf of overseas collaborators and Thai flow-based analysis researchers) congratulated Professor Sakai on his privilege occasion of receiving an **award as an Outstanding Researcher from Japan Society for Analytical Chemistry**.

**Miro Polasek** (Czech Republic) reported on the automated detection of organophosphate warfare gases (nerve agents) in air based on Micro-SIA-lab-on-valve system. **Norio Teshima** presented a collaboration work with Professor **Sandy Dasgupta**

(Texas Tech.University, Lubbock, USA) on the determination of



acetone in breath using a flow setup with integrated diffusion scrubber and LED-liquid core waveguide-based spectrometry. **Keiro Higuchi** (Ogawa & Co Ltd.) presented the determination and continuous monitoring system for nitrogen compounds in water samples. **Kate Grudpan** (Thailand) discussed some approaches in cost-effective (flow) analysis for development in environment. **Kritsana Jitmanee** (who is on leave from Chiang Mai University as a postdoc fellow at AITech) reported on speciation of selenium in natural waters by ICP-MS coupled with pre-column concentration and separation system.

Presentations were also given by students: Flow-injection determination of iron and cobalt coupled with capillary electrophoresis separation by **Takuma Hino**; Kinetic method for the assay of vanadium based on catalytic reaction by stopped-in-loop flow technique by **Masami Kuno**. Determination of trace oxoanions in human urine involving flow-injection on-line column concentration with ICP-MS by **Hisashi Ueda**; Determination of gaseous formaldehyde with diffusion scrubber by **Minoru Ueda**; and Reagents Regeneration Flow Injection Analysis (RRFIA) method for spectrophotometric determination of copper by **Nobukazu Fukui**. The students' presentations occurred in a friendly atmosphere of sharing and exchanging the experiences. The students had an opportunity to communicate (giving oral presentation and discussion and receiving a feedback from the audience) on their research work in international scientific environment. Such activities certainly stimulate future professional development of the younger researcher generation.

Obviously no symposium or conference would be complete without accompanying social events. All the participants and especially the international Project collaborators had an opportunity to experience the warm Japanese hospitality not only during the Welcome Banquet arranged in the first evening with plenty of typical Japanese as well as international food and drinks and productive discussions. Apart from the scientific benefits the contribution of the meeting to mutual inter-cultural human understanding and formation of friendly inter-personal relations between scientists coming from different parts of the

world must be mentioned. Another social event was an evening party for flow-based analysis researchers hosted by Norio Teshima in his home; Japanese and Thai dishes, intimate family atmosphere and informal friendly discussion were much appreciated by the participants.

It was a well-organized fruitful Symposium indicating that the tasks of the Frontier Research Project involving substantial contributions from the flow-based analysis research were successfully fulfilled.



At banquet



At Norio's house