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## JLCS Summer School 2009

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## REPORT

### JLCS Summer School 2009

At the beginning of the 20th century, liquid crystals had not been accepted by famous scientists. Otto Lehmann, professor of physics at the Technical University Karlsruhe in Germany, tried to popularise the existence of liquid crystals through numerous experimental demonstrations. For this purpose, in 1912, he offered a summer school on liquid crystals to scientists as well as laymen in his private holiday laboratory in front of the Hundsbach sanatorium, which was situated in the Black Forest (Schwarzwald, Baden-Württemberg). This was the first summer school on liquid crystals in the world.

About 100 years later, the Japanese Liquid Crystal Society (JLCS) organised the *JLCS Summer School 2009* at Atami, one of the oldest and largest hot springs in Japan, from 16–18 July 2009. More than 60 participants came and shared their experiences.

Our first summer school was organised by the Japanese Association of Liquid Crystal Scientists (JALCS) in 1995 with the help of Professor Ohta (Shinshu University), and resulted in a great success with a number of participants. JLCS took over the summer school in 1998 and has organised it every year since. The participants include undergraduate students, master students, postdoctoral fellows, professors, scientists and engineers from manufacturing companies, namely, participants from young students to senior researchers. They need opportunities to get together, share ideas and learn from each other. This is why the JALCS and JLCS have been running summer schools since 1995.

This year we, the organising staff, determined the aim of the summer school to be ‘*What is a Liquid Crystal?*’ because we unfortunately did not understand well enough the essentials of liquid crystal phases and liquid crystalline materials. The lectures included both applications and basic sciences about liquid crystals:

- (1) Introduction to LCDs (Dr S Komura, Hitachi Displays (see Figure 1));
- (2) Control of Orientation (Dr M. Yoneya, AIST);
- (3) Thermodynamics (Professor K. Saito, Tsukuba University);
- (4) Blue Phases (Professor H. Kikuchi, Kyushu University);

- (5) Viscoelasticity and Light Scattering (Professor A. Kubono, Shizuoka University)
- (6) Control of Birefringence and Polarisation (Professor T. Nose, Akita Pref. University)
- (7) How to Determine Phases? (Professor Y. Takanishi, Kyoto University)
- (8) X-ray Structural Analysis and Dimensional Order (Professor K. Ohta, Shinshu University)

Besides these lectures, poster presentations were scheduled after dinner (see Figures 2 and 3).



Figure 1. Lecture of Dr Komura on liquid crystal displays.



Figure 2. Poster session at the JLCS summer school.



Figure 3. Japanese style banquet.

Stimulating discussions were held across the generations and affiliations with a glass of alcoholic or soft drink in the hand of each participant. Most of the

speakers and the audience provided some good ideas for improving the properties of LCDs and developing novel devices.

The summer school has helped all participants to gain an understanding of liquid crystals and also establish networks with new friends who can assist in any scientific research and technological developments they are involved in or going to be involved with in the future. The banquet helped to foster these new networks.

The next JLCS summer school will be held in Tokyo or a neighbouring city in July 2010. We hope you will be interested in the summer school and will plan to join us.

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