第1回異方性岩石に関するワークショップ参加報告[†]

ベンヌール ジヤド*

The 1st Workshop on Anisotropic Rock, September 2013 (Potsdam, Germany)

by

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The Helmholtz Centre Potsdam GFZ German Research Center for Geosciences has invited and organized the first workshop on anisotropic rock that was held in Potsdam, Germany, on 27th and 28th of September 2013, immediately succeeding the EUROCK 2013 (The 2013 ISRM International Symposium – Rock Mechanics for Resources, Energy, and Environment. Wroclaw, Poland). The main focus of the workshop was to discuss various facets of anisotropic rock, but is also meant to be a more intimate gathering of colleagues who accompanied Prof. Ove Stephansson (GFZ, Sweden) during his journey through earth sciences, lasting 75 years.

The workshop took a place at the Castle Cecilienhof, Potsdam, the last castle built by the Hohenzollern family that ruled Prussia and Germany until 1918. It is famous for having been the location of the Potsdam Conference in 1945, where the leaders of the Soviet Union (Stalin), the United Kingdom (Churchill) and the United States (Truman) took important decisions affecting the shape of post-World War II Europe and Asia.

The sum of participants in this workshop was 30 people representing their institutions in many countries around the world, including Brazil, Canada, Czech Republic, Germany, India, Italy, Japan (Table 1), Korea, Sweden, Switzerland, UK, USA and others (Fig. 1). The invited participants contributed to the theme anisotropic rock and other topics such as :

- In-situ stress analysis and determination,
- Elasticity and seismic velocities,
- Hydraulic fractures and permeability,
- Pore pressure and hydraulic diffusivity,
- Fracture strength and failure and
- Numerical modeling.

In the first day of the workshop and after the registration, Dr. Arno Zang (GFZ, Germany) introduced and welcomed all the participants, then he chaired the morning session that consisted of 3 presentations started by Dr. Nick Barton (Nick Barton & Associates, Oslo, Norway) in title of “Anisotropy is Everywhere : To See

and Measure”, followed by Prof. Simon Low (ETH Zurich, Switzerland) who presented a case study of “Multi-Scale Pore Pressure Diffusion around the Gotthard Base Tunnel” and Prof. Bezael Haimson (University of Wisconsin Madison, USA) in “Hydraulic Fracturing in a Transversely Isotropic Rock”.

After the lunch break, the afternoon session was chaired by Prof. Giovanni Barla (Politecnico di Torino, Italy). In this session also there were 3 presentations by Dr. Ki Bok Min (Seoul National University, Korea) in “The Role of Discrete Element Method (DEM) for Anisotropic Rock Mechanics” followed by a presentation of Prof. Yoshitaka Nara (Kyoto University, Japan) entitled “Determination of P-wave Velocity Distribution and Principal Stress using Polyhedral Granite Specimen” then the final presentation for the day by Dr. Heinz Konietzky (TU Bergakademie Freiberg, Germany) in “Micromechanics of Hard Rocks”.

The local organizing committee had arranged a guided tour to the historical rooms of Castle Cecilienhof where the participants were introduced to construction, architecture, interior design, history before 1945 and Potsdam Conference of 1945. In 1990 it became a part of the UNESCO world heritage site called “Palaces and Parks of Potsdam and Berlin”. The private rooms were opened to the public in 1995 after comprehensive restoration work. The main rooms used for the conference were as follows : The music salon (white salon), used by the Soviet delegation as a reception room. The writing room (red salon), used by the Soviet delegation as a study room. The great hall which was the conference hall. The smoking room, used as a study room of the American delegation. The library, used as a study room of the British delegation and the Breakfast room, possibly used as a secretary’s office. Later at the night, there was a conference dinner and light hearted remembrances where friends of Prof. Ove Stephansson (GFZ, Sweden) gave short speeches, shared and cherished memories of the old times (Fig. 2 & 3).

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In the second and the final day of the workshop, there was only a morning session chaired by Prof. Yuzo Obara (Kumamoto University, Japan). 4 topics were presented, started by Prof. Tsuyoshi Ishida (Kyoto University, Japan) in “Effect of Granite Grain Size on Anisotropic Crack Extending Direction in Hydraulic Fracturing”, followed by Prof. Douglas Schmitt (University of Alberta, Canada) who presented on “Field and Laboratory Measurements of Anisotropy”. After a short coffee break, Prof. Mahendra Singh (IIT Roorkee, India) presented “The Use of Critical State Concept in Determination of Triaxial Strength of Anisotropic Rocks” followed by Ziad Bennour’s (Kyoto University, Japan) presentation on “Anisotropic Crack Extension in Hydraulic Fracturing Experiments of Shale Cores”. Finally Dr. Arno Zang (GFZ, Germany) concluded the workshop and ended with a Closing session.

At the end of the workshop, an idea was born and suggested an invitation to contribute to a special issue Rock Mechanics and Rock Engineering in honor of Prof. Ove Stephansson. The tentative schedule is as follows :

- Sep. 2013, Invitation to submit manuscripts
- Oct. 2013, submit of authors and working title
- Jan. 2014, online submission
- Mar. 2014, online submission closes
- Sep. 2014, Review ends, online publication
- Oct. 2014, Production process of printed version

As we expect, the outcome of such a workshop are : to allow researchers and practitioners to learn from each other’s experiences, to establish long lasting collaboration between the Industry and research institutions and to work together on a research agenda to identify unsolved problems.

Table 1 Participants in anisotropic rock workshop (Japan).

Name	Affiliation
Tsuyoshi Ishida	Kyoto University
Yoshitaka Nara	Kyoto University
Yuzo Obara	Kumamoto University
Tatsuya Yokoyama	OYO Corporation
Ziad Bennour	Kyoto University

Fig. 1 Participants in anisotropic rock workshop.

Fig. 2 Participants of the workshop dining and socializing.

Fig. 3 A side of light hearted remembrance moments.