

Preface

The Ninth International Symposium on Experimental Mineralogy, Petrology and Geochemistry (EMPG IX) was organised by the Institute of Mineralogy and Petrology of the Swiss Federal Institute of Technology Zurich (ETH) and was held at the Department of Earth's Sciences in Zurich, on March 24 – 27, 2002. Abstracts were published in the Journal of Conference Abstracts, volume 7, number 1 (<http://www.the-conference.com/JConfAbs/7/empgindex.html>). The symposium was orientated by the themes and success of the previous EMPG meetings, which that were held on a biennial basis in Nancy, Bochum, Edinburgh, Clermont-Ferrand, London, Bayreuth, Orléans and Bergamo. In Zurich a total of 300 participants presented 270 scientific contributions, approximately 10% less than in Bergamo, indicating stabilisation around 300 participants after steady increase over the last 16 years. The contributions were subdivided into 14 themes, presented in 2 parallel oral and 2 poster sessions held on consecutive days. Most participants were of European provenance, with a large representation of Japan and smaller delegations from North America, Australia, Brazil, South Africa, China and Taiwan. The attendance of 33 scientists from Eastern Europe and 12 young researchers from other countries was enabled by generous financial support through the SCOPES programme of the Swiss National Science Foundation and contributions from several European mineralogical societies and the European Mineralogical Union.

The scientific programme of EMPG meetings marks the strong commitment to thorough experimental investigation as a basic contribution towards the quantitative understanding of the extraordinary complexity of natural phenomena. 'Experimentalists' have presented the results of studies performed in their laboratories that cover a variety of conditions ranging from hydrothermal systems to fragmenting magmas, to ultra-high pressure conditions prevailing in the Earth's lower mantle and core. Experimental research in Earth sciences is stimulated by the continuous advances of high-temperature, high-pressure technology. An increasing number of experimental studies focus on the chemical, physical, and rheological properties of minerals, rocks, melts and fluids thereby providing powerful tools for the understanding of the Earth's dynamics.

EMPG IX started with the plenary lecture presented by Prof. Timothy L. Grove (MIT, Boston, Massachusetts, USA) on the subject 'The role of H₂O in melting and differentiation of the Earth's mantle'. The presentation summarized the current knowledge and state-of-the-art research combining high-pressure experimental studies and petrology/geochemistry to unravel the complex nature of island-arc petrogenesis and crust-mantle differentiation processes. This lecture represents an example of EMPG's major strength: bridging the world of experimental petrology, geochemistry and mineral physics with large-scale dynamic processes operating on our planet.

EMPG IX continued the tradition of publishing a selection of articles into launch a special issue of European Journal of Mineralogy EJM (see EJM vol. 1/2, vol. 4/2, vol. 5/3, vol. 7/4, vol. 9/2 and vol. 13/3). We received a considerable number of manuscripts, underlining the success and significance of this initiative. Nine papers are presented in this special issue; several more will be published in subsequent issues of EJM. The papers reflect the broad field spectrum covered by the experimental research represented by at the EMPG meetings.: Two review papers by invited lecturers, Bjorn O. Mysen on melt physics and properties and by William A. Bassett and Bjorn O. Mysen, summarize the state-of-the-art in hydrothermal diamond-anvil-cell techniques and in melt physics and properties, respectively. Contributions by Green & Adam and Adam & Green present novel data on trace-elements partitioning between minerals and aqueous fluids and silicate melt respectively; Huang reports new experimental results on the kinetics of polycrystalline quartz at high pressures; Benne & Behrens contribute new high-precision data on the solubility of water in haplobasaltic melts the contribution by Huang reports new experimental results on the kinetics of polycrystalline quartz at high pressures. Quane & Russell present a new method to quantify the welding intensity of pyroclastic flow deposits; Mueller et al. discuss their data acquired by simultaneous XRD and elastic-property measurements to provide a standard-free pressure calibration in a multi-anvil device; Benne & Behrens contribute new high-precision data on the solubility of water in haplobasaltic melts, and Alberico et al. provide a crystallographic characterisation of OH-rich topaz from ultra-high pressure terrains.

We are confident that these papers will stimulate further experimental research in Earth Sciences that will be presented in the next forthcoming EMPG symposia.: The next opportunity will be EMPG X, will be hosted by the Institute of Mineralogy, University of Frankfurt, Germany, on April 4–7, 2004 (for more information: <http://www.empgX.uni-frankfurt.de>).

Peter Ulmer, EMPG IX convener