

21st Annual V. M. Goldschmidt Conference, Prague, Czech Republic – Sisir K. Mondal (Department of Geological Sciences, Jadavpur University, Kolkata - 700032 Email: sisir.mondal@gmail.com)

This year, the 21st Annual V. M. Goldschmidt Conference was held at Prague, Czech Republic from 14th to 19th August. The Goldschmidt ConferenceTM is the premiere international conference on geochemistry (<http://www.goldschmidt2011.org/>). This conference was organized and sponsored by The European Association of Geochemistry and The Geochemical Society (USA). This year the main theme of the conference was *'Earth, Life and Fire'* under which there were 23 sub-themes in the conference. The different subjects that were covered under these themes include Cosmochemistry-Planet Formation, Primitive Earth: From Core to Atmosphere, Evolution and Dynamics of the Deep Earth, Mantle to Crust: Ocean Ridge and Intraplate Volcanism, Continental Crust Formation and Evolution, Recycling: Subduction, The Mantle Wedge and Arc Volcanism, Earth

Resources: Energy, Earth's Resources: Ores etc. There were 175 numbers of Sessions under the various themes in the conference. A total of 3800 abstracts were submitted in the conference by participants of more than hundred countries across the globe. There was an additional special plenary session focusing on the Fukushima accident (Japan) and its geochemical consequences. The plenary presentations in the conference were given by Samuel Mukasa (*'Volatiles in the Mantle: Impact on Intraplate Magmatism'*), Marc Hirschmann (*'Deep Earth Volatile Cycles: From Ancient to Modern'*), Edouard Bard (*'Geochemical Profiles to Study the Last Deglaciation and its impact on Rivers'*), Frank Selsis (*'Exoplanet Atmospheres: From Hot to Habitable Worlds'*) and Victoria Orphan (*'Microbial Partnerships and Methene-Oxidation in the Deep Sea'*).

There were many new results presented in the conference, which were based on high impact research. Among these the Session 11b (*'Ore Deposits and the Role of the Lithospheric Mantle'*), convened and chaired by me and other three (Prof. Wolfgang Maier, University of Oulu, Finland, Dr. Thomas Oberthur, BGR, Germany, and Dr. Marco Fierentini, University of Western Australia), highlighted the role of the lithospheric mantle in ore deposits. This particular scientific aspect is very much relevant with respect to fundamental issues in the Earth sciences as well as for the exploration group. There were at least 68 submissions in this session. This particular session became a very high-power session and promoted couple of most significant keynote and invited speakers such as Prof. Bill Griffin (GEMOC, Australia), Dr. Steve Barnes

(CSIRO, Australia), Prof. Shoji Arai (Kanazawa University, Japan), Prof. Nick Arndt (Université J. Fourier, France), Prof. Edward M. Ripley (Indiana University, USA), and Prof. Sarah-Jane Barnes (University of Chicoutimi, Canada). The role of the lithospheric mantle in magma generation has been particularly controversial since the 1970s when evidence for strong and regionally homogenous crustal components was first found in certain flood-type basalt provinces (e.g. Karoo). Our session covered the current state of knowledge and understanding of the composition of the SCLM, processes of magma generation, and evidence for metal derivation in a range of magmatic and hydrothermal mineral deposits from the SCLM. There was a strong debate during this session between Prof. Bill Griffin and Prof. Nick Arndt on the aspect of metal source from the lithospheric mantle versus deeper mantle whereas, Prof. Edward M. Ripley emphasized on the role of timing of the sulfide saturation in the formation of magmatic Ni-sulfide deposits. There will be a special issue of the LITHOS based on this session 11b, which will be edited by me, Prof. Wolf Gang Maier and Prof. Bill Griffin.

There was an interesting research presented by Maya et al. (2011) of Pondicherry University, India in the Session 02b (*'Geology, Age and Origin of the Oldest Terrestrial Rocks and Minerals'*). Maya et al. dated the komatiitic rocks of the Sargur Group from the Western Dharwar Craton that gives an age of 3.1Ga and indicate a depleted mantle source. This research is important because earlier workers dated this

suite of komatiitic rocks, and the age is 3.4Ga. J. M. Maya presented this paper as one of the research scholar participants from India. There were few other participants from India who presented their significant research results in the conference such as Prof. N. V. Chalapathi Rao (Banaras Hindu University) and Prof. R. Bhutani (Pondicherry University). In addition, there were significant representations in the conference from the Physical Research Laboratory and National Geophysical Research Institute.

In the Session 04a (Chemical Geodynamics: 25 Years of Mantle Components) Dr. S. Hart (Woods Hole Oceanographic Institute, USA) presented the keynote on 'The Mantle Zoo: New Species, Endangered Species, Extinct Species' that described the several geochemical reservoirs of the mantle. This particular subject has the most significant role in understanding the Earth's chemical differentiation process through time. There were many parallel sessions in the conference, which were based on the development in research on atmospheric science, climate change, weathering and surface processes, oceans atmosphere, biogeochemistry, and evolution of early Earth's environment. In addition, the conference also emphasized on the aspects of frontiers in analytical techniques, computational geochemistry, mineralogy and mineral physics, and hydrogeochemistry and global water sustainability.

In addition to convening and chairing the session I have presented a paper in the same session (Session 11b); the title of this paper was *'Sulfide Mineralogy of West*

Greenland Kimberlitic Mantle Xenoliths' coauthored by Dr. Stefan Bernstein and Prof. Minik Rosing of University of Copenhagen. Sulfides are common in mantle rocks and control the PGE budget along with PGE behavior during melting and thus can be used to trace the Earth's differentiation processes. Our study on the kimberlitic xenoliths from west Greenland shows the presence of two types of sulfide populations: one variety is included in the primary silicate minerals and the other variety is interstitial to the silicate minerals. Our study suggests that the sulfide was initially monosulfide solid solution (mss) that re-equilibrated at low temperature. We have suggested that the effect of mantle melting as well as melt-rock interactions may be responsible for the initial sulfide mineral assemblage.

There were many short-courses and workshops organized before and during the conference. I had the opportunity to participate in one of the workshops (*'PGM from experimental to natural'*) organized by Drs. Anna Vymazalova and Federica Zaccarini and sponsored by the SGA and IMA-COM in the Czech Geological Survey. The notable speakers in this workshop were Dr. Steve Barnes of CSIRO, Australia (X-ray computed tomography of platinum group minerals in 2D and 3D) and Dr. Anna Vymazalova, Czech Geological Survey (Synthesis of platinum group minerals). Through this workshop the participants had received a first hand overview on the synthetic platinum group mineral studies in the laboratory.