

Preface

The igneous rocks present on the surface of the Earth are the imprints of the complex physico-chemical processes in the interior of the Earth. Formation of sub-surface magma chambers and the evolutionary processes that govern the changes in the composition of magmas during its ascent and emplacement are important to understand the origin of various types of magmatic rocks. Magma mixing and mingling have now been recognized as major magmatic processes both in plutonic and volcanic environments. On the basis of study of textural, mineralogical, and chemical criteria, viable models of magma production and evolution can be proposed. Hydrothermal fluids generated by diverse crustal and mantle-related geological processes are found as significant ore-depositing agents. Oxidized granitoids are mostly responsible for the origin of metallic (copper and gold) sulfide deposits particularly of porphyry type. Thus, these processes are also important for assessing the mineral deposits of magmatic origin.

In order to understand these geological and geophysical processes, we invited Dr. Santosh Kumar, Professor and Head, Department of Geology, Kumaon University, Nainital, India, a noted researcher of igneous petrology and Dr. Rishi Narain Singh, INSA Scientist, CSIR-NGRI, Hyderabad, India who is known for his valuable contributions in the field of mathematical modelling of various geological and geophysical processes to edit a book on the *Modelling of Magmatic and Allied Processes*. Valuable contributions on the subject have been made by various active scientists. I sincerely thank the editors and the contributors for this important edition in The Society of Earth Scientists Series.

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<http://www.springer.com/978-3-319-06470-3>

Modelling of Magmatic and Allied Processes

Kumar, S.; Singh, R.N. (Eds.)

2014, XI, 240 p. 74 illus., Hardcover

ISBN: 978-3-319-06470-3