

Preface

This special issue is a tribute to **Professor Sisir Kumar Sen** for his research contributions to petrology and geochemistry, and his efforts in educating a generation of Indian petrologists. Prof. Sen returned to India after graduating from the University of Chicago, where he worked with Prof. Hans Ramberg in the late fifties, and was part of a stellar group of graduate students who later became stalwarts in the fields that encompassed petrology, geochemistry, mineralogy and structural geology. This was when Ramberg and his co-workers came up with pioneering ideas on the use of mineral compositions to recover information on the intensive variables that had controlled the evolution of rocks through ingenious applications of the theories of equilibrium thermodynamics. It was the 'teething period' of the field when the debate seems to have even surrounded on if thermodynamics is at all applicable to systems which are as complex as natural systems!

Immediately after returning to India, Prof. Sen got started in promoting the idea of applying the concepts of equilibrium thermodynamics to the field oriented problems of metamorphic petrology, especially to the problem of element partitioning among coexisting minerals. These led to a series of papers showing how a specific distribution coefficient varies systematically with metamorphic grade. These papers were important to the subsequent quantitative formulations of what are known today as exchange geothermometers, in

which Prof. Sen and his students also played significant roles. This was an early and fortunate start for the Indian students who came in contact with Prof. Sen, as they were exposed to the forthcoming revolution in petrology without any significant time lag. He continued his work on reconstructing the P - T paths of metamorphic rocks and fluid buffering during metamorphism that were at the heart of some of the recent controversies. It is not so much whether he won the battle, but the methods which he employed to resolve the controversies that are instructive to students of petrology. Prof. Sen taught his students the importance of integrated approach, combining observations on various scales with theoretical knowledge and experimental results.

Granulites and the role of fluids during metamorphism have been life long passions of Prof. Sen. Thus, it is not surprising that most of the contributions in this special issue address a variety of topics in these areas. However, included are also other important contributions.

As guest editors of this special issue, we thank the international group of scientists for their contributions, and the reviewers for their helpful and constructive comments. We also thank the **Indian Academy of Sciences** for bringing out this special issue in honour of Prof. Sen, and giving us the opportunity to serve as guest editors. We hope that we have been able to do justice to the objectives of this special issue.

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