



## **Mineral Physics with Computation and Experiment: Insights from the EuroMinSci Programme**

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Understanding the composition, structure and properties of minerals and rocks at high pressures and high temperatures and obtaining insight into the interactions between minerals and the environment is the central aim of current day mineral physics research. Results from such investigations allow us to deepen our understanding of an extensive range of problems, ranging from the dynamics of the Earth to the emergence of life as a process of self-organisation of molecules on mineral surfaces.

Recent progress in model calculations now allows to study structures and properties of minerals and rocks on a variety of length and time-scales and it is now possible to link such 'computer experiments' with sophisticated experiments performed in the laboratory or at large scale facilities and with observations of natural phenomena.

With this background, we have organized a collaborative research effort funded by the European Science Foundation and national funding agencies. This EUROCORES Programme EuroMinSci (European Mineral Sciences Initiative) has eight international and one national collaborative research projects and more than eighty principal investigators in thirteen countries. The hallmark of the collaborative research projects is that they combine state-of-the-art experiments with new modelling techniques in order to explain macroscopic phenomena on a microscopic basis.

The contribution will present highlights from the different collaborative research projects and discuss the advantages and limitations of such a complex internationally funded research effort.