

Pore-Scale Geochemical Processes

80 *Reviews in Mineralogy and Geochemistry* 80

FROM THE SERIES EDITOR

As the 80th volume of *Reviews in Mineralogy and Geochemistry*, this edition marks some historical changes in faces. It is the first volume since Jodi Rosso became the Executive Editor of *Elements* after many years in the position of Series Editor with this journal. I am very grateful to Jodi for her continuing support. It also marks the return of two other editors: it is now eighteen years since a volume on a similar topic was issued, Volume 34: *Reactive Transport in Porous Media*, for which Carl Steefel was also a Volume Editor; Lawrence Anovitz was also a Volume Editor for Volume 33: *Boron Mineralogy, Petrology, and Geochemistry*.

All supplemental materials associated with this volume can be found at the MSA website. Errata will be posted there as well.

Ian P. Swainson, Series Editor
Vienna, Austria
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PREFACE

The pore scale is readily recognizable to geochemists, and yet in the past it has not received a great deal of attention as a distinct scale or environment that is associated with its own set of questions and challenges. Is the pore scale merely an environment in which smaller scale (molecular) processes aggregate, or are there emergent phenomena unique to this scale? Is it simply a finer-grained version of the “continuum” scale that is addressed in larger-scale models and interpretations? We would argue that the scale is important because it accounts for the pore architecture within which such diverse processes as multi-mineral reaction networks, microbial community interaction, and transport play out, giving rise to new geochemical behavior that might not be understood or predicted by considering smaller or larger scales alone.

Fortunately, the last few years have seen a marked increase in the interest in pore-scale geochemical and mineralogical topics, making a *Reviews in Mineralogy and Geochemistry* volume on the subject timely. The volume had its origins in a special theme session at the 2012 Goldschmidt meeting in Montreal where at least some of the contributors to this volume gave presentations. From the diversity of pore-scale topics in the session that spanned the range from multi-scale characterization to modeling, it became clear that the time was right for a volume that would summarize the state of the science. Based in part on the evidence in the chapters included here, we would argue that the convergence of state of the art microscopic characterization and high performance pore scale reactive transport modeling has made it possible to address a number of long-standing questions and enigmas in the Earth