may wish to understand more about unfamiliar methods, and to anyone training new users of these techniques. It will be an excellent companion volume to RiMG v. 18, and deserves a place in the row of white volumes on the shelf of every geochemist, petrologist, and mineralogist.

Leslie Baker
University of Idaho

The Geochemistry of Geologic CO_2 Sequestration. Reviews in Mineralogy and Geochemistry v. **77**, Mineralogical Society of America and the Geochemical Society, Chantilly, VA, ISBN 978-0-939950-92-8. Price: $40.

If we continue our business-as-usual greenhouse emissions, our species will need to sequester (*i.e.* prevent from reaching the atmosphere) trillions of tons of carbon dioxide over the next 100 years if we are to avoid dangerous climate change. *The Geochemistry of Geologic CO_2 Sequestration* collects together the underpinning science of CO_2 storage in underground rock formations in 15 chapters. As you might expect from the RiMG series, this volume focuses on the molecular and pore-scale processes occurring in a CO_2 reservoir. One hundred pages were dedicated to a comprehensive review of the kinetic and thermodynamic properties of CO_2–H_2O–mineral interaction in high-pressure systems (chapters 3, 4, and 5). Chapter 3 is a formidable review of carbonate mineral thermodynamics in which citations from the 1970s (*e.g.* the classic work of Robie and Hemingway) are interspersed with recent work on more exotic carbonate minerals. Chapter 3 is an excellent summary of brine–CO_2 interaction, which is a critical factor in evaluating the storage capacity of a reservoir, but which lacks fundamental experimental data.

This leads neatly to the state-of-the-art geochemical modeling currently employed to describe these environments, and attempts to connect the pore-scale processes (chapter 8), with the larger-scale rheology of a CO_2 storage formation (chapter 12). A contribution by Bickel *et al*. (chapter 2) presents some of the natural analogs of underground CO_2 storage, including methods of monitoring and quantifying leakage from these systems. Power *et al*. (chapter 9) present a summary of carbon mineralization, an alternative pathway to sequestration involving the chemical transformation of CO_2 into carbonate minerals.

The widespread acceptance of underground carbon sequestration for climate change mitigation is presently held back by uncertainties in the capacity and longevity of the storage reservoirs. While this book discusses contemporary investigations of these, including a section on cap-rock fracture (chapter 13), the natural examples of leaking CO_2-rich aquifers (chapter 2), and the relative and time-dependent contribution of physical and chemical trapping (throughout), there are no overarching conclusions or normative statements that might decrease this uncertainty. These uncertainties, of course, can only be resolved by reservoir-specific studies, and it is probably too much to ask of this volume. I would encourage anyone with interests in CO_2 sequestration to acquire a copy of this book as it is likely that CO_2 reservoir engineers of the future will call heavily upon it as a standard reference text.

Phil Renforth
Cardiff University, UK

https://doi.org/10.1017/S000986040004026X Published online by Cambridge University Press