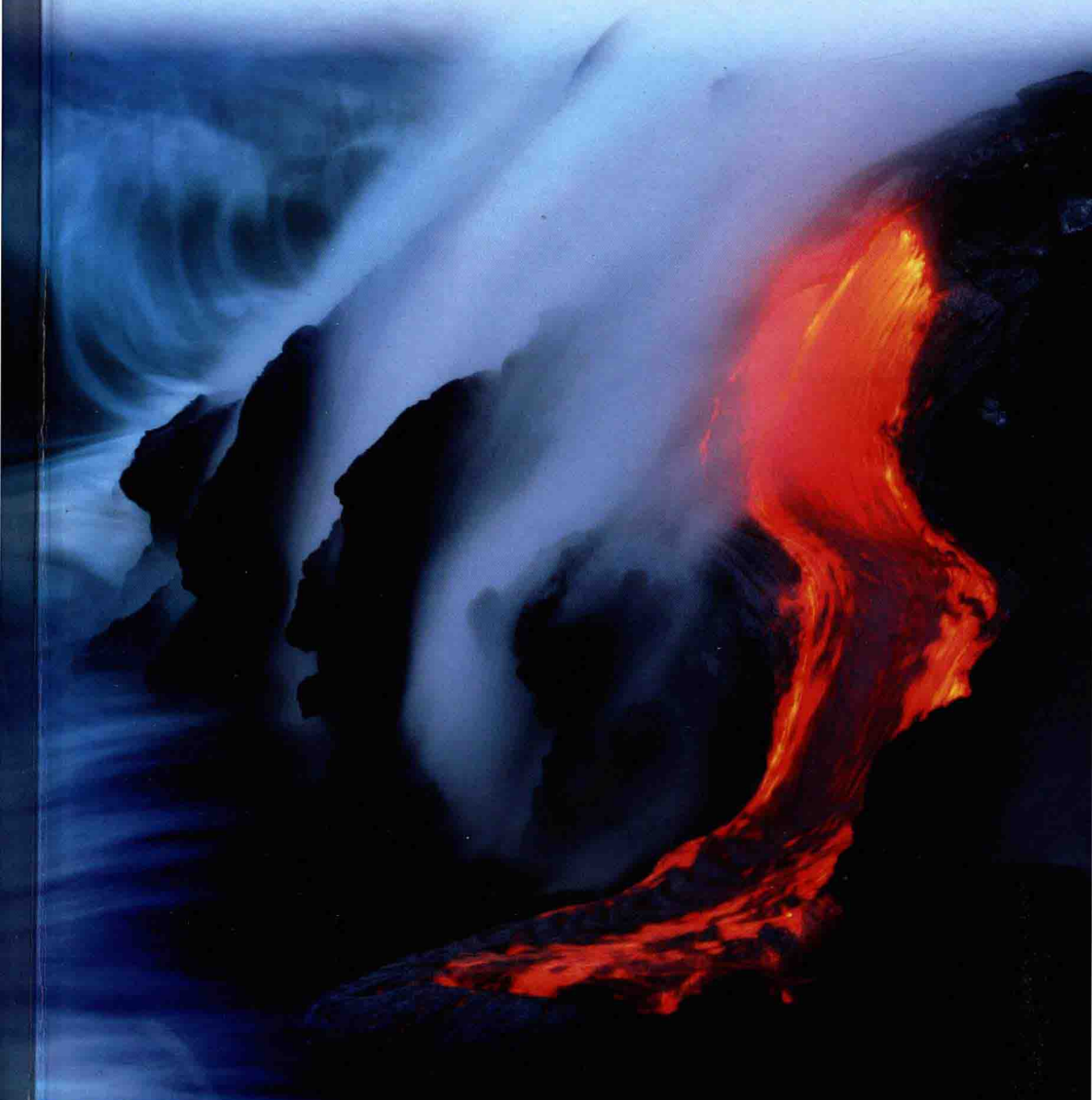


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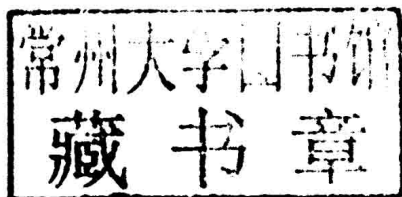
BRUCE C. BUNKER & WILLIAM H. CASEY

The Aqueous Chemistry of Oxides

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The Aqueous Chemistry of Oxides

Bruce Bunker dedicates this book to his wife, Cathy, whose numerous suggestions and infinite patience were critical to the completion of the project. He also thanks those scientists who mentored him throughout his career, including Professor Frank DeHaan (Research Advisor, Occidental College), Professor Russell Drago (Advisor, University of Illinois), Professor Galen Stucky (now at University of California at Santa Barbara), Dr. Robert Eagan (Sandia National Laboratories), Dr. Gary McVay (Pacific Northwest National Laboratory), and Professor Delbert Day (University of Missouri-Rolla).

From Bill Casey: Do mo bhean chéile álainn, Sorcha, a bhfuil mé pósta léi le 33 bliain agus do mo mhac iontach, Séamus Óg—tiomnaím an leabhar seo daoibh, an bheirt a chuireann gliondar ar mo chroí.

COVER ART FIGURE CAPTIONS

Oxide–water reactions define many of Earth’s environments and provide us with critical materials and technologies. Front cover: On the coast of the island of Hawaii, breaking waves encounter hot lava, creating a plume of wind-swept steam. (Image provided by CJ Kale at Lavalight.com, with permission). The resulting oxide–water reactions contribute to the formation of Hawaii’s famous black sand beaches. Similar reactions occur on a massive scale along the entire length of spreading centers such as the Mid-Atlantic Ridge, exerting a strong influence on the elemental composition of our oceans. Back cover: The complex chemical behaviors exhibited by a claylike layered cobalt hydroxide illustrate several fundamental water–oxide reactions. Some of these reactions—including ion exchange, and electrochemical and photochemical processes—are critical to many energy and environmental technologies. Reactions discussed in this book include electrochemical energy storage in batteries, light harvesting for solar energy, optical communication systems, catalytic conversions, water purification, and environmental remediation.

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