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David J. Vaughan

MINERALS

A Very Short Introduction



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Chapter 1

The mineral world

In 2004, I had the honour of being the lecturer at a ‘Friday Evening Discourse’ at the Royal Institution in London. These public lectures, aimed at the popularization of science, were initiated by Michael Faraday in 1826, and were probably the first such lectures anywhere in the world. My lecture was entitled ‘Minerals, Molecules and Maladies’; and, indeed, my first word was ‘minerals’. I pointed out that the first experience many of us have of minerals comes from those seen in pebbles collected on a beach during a seaside holiday, or the fine specimens of minerals on display at a local museum. Although the study of minerals begins with their collection and identification, my lecture was about the new developments in what I would describe as ‘modern mineralogy’, the central theme of this book.

The study of minerals (mineralogy) is the most fundamental aspect of the Earth and environmental sciences. Minerals existed long before any forms of life. They have played an important role in the origin and evolution of life, and interact with biological systems in ways we are only now beginning to understand. Mineralogy is arguably also the oldest of all of the practical sciences. The first manufacture of fire that could be called upon as needed depended, in part, on the sparks produced on striking minerals such as pyrite. Although we cannot be sure of the date when the first mineral-based fire strikers were used, the earliest