

Review of

Rocks: A Very Short Introduction. By Jan Zalasiewicz. Oxford University Press 2016, 144 pages, ISBN-10: 0198725191, ISBN-13: 978-0198725190 Paperback. Price USD 11.95

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In eight chapters, each concerning a different rock type, Jan Zalasiewicz has succeeded in the daring challenge of presenting Earth's rocks in a concise and enjoyable manner that will be appreciated by both the specialist and the novice. ROCKS, a very short introduction, is like carrying the Earth in your pocket. The originality of this book lies in the simplicity of the way in which rocks are presented, and in its emphasis on how rocks can be directly related to their formation processes. This book provides an original view of the different rock types, avoiding pedantic scholarly classification, making it easy to read and providing a fresh perspective. The book offers a modern view of rock formation and planetary processes, peppered with historical facts and contemporary challenges. One small criticism concerns the illustrations, whose overall quantity and eloquence are insufficient to illustrate such a fine text.

Chapter 1 develops an elemental view of the formation of silicate minerals, the building blocks of rocks, and how they originated in the solar system as interstellar dust. The reader is thus introduced to the formation of planetary systems starting with the most primordial rock types, meteorites. This chapter introduces the reader to the wide range of rocks that form our solar system, setting the stage for the discussion of the rocks that make up Earth. In the rather too short Chapter 2 "First rocks on a dead planet", magmatic processes at the origin of igneous rocks, and their geodynamic settings are presented. From the magmatic ocean stage of the Earth's infancy, which shaped the current internal structure of the Earth, through the processes of magma generation and evolution that continue to form the oceanic and continental lithosphere, the reader is introduced to the main igneous rock forming processes of the modern Earth. Chapter 3 manages to present most of the wide spectrum of sedimentary rocks in a concise format. The main rock types, their depositional environments, and their diagenesis are carefully blended together, giving the reader a strong sense of what the rock is made of, and how it forms. The discussion of diagenetic processes naturally leads into the following chapter that deals with metamorphic rocks.

"Rocks transformed" is devoted to the evolution of rocks when exposed to different metamorphic gradients. After presenting some structural geology basics, the chapter guides the reader through the transformation of a sedimentary rock exposed to a prograde path. The evolution of the mineralogy during metamorphism is made clear while avoiding the complexities of open-systems and chemical considerations that usually make the understanding of metamorphic rocks problematic. Nonetheless, the key characteristics of metamorphism are well introduced and the basics of PT-t paths and their importance in unravelling the metamorphic rock history are brought forward. The reader is by now familiar with diagenesis and metamorphism, allowing the author to delve deeper into the Earth. Thus the next chapter deals with the most inaccessible parts of our planet, the inner envelopes. This chapter revolves around the dynamics of the mantle, and introduces the notion of plumes, sinking slabs, and transition zones, and shows their importance in shaping the earth. A subsection of this chapter is devoted to the core, and summarizes the most important known features of this inaccessible region of the Earth. "Living rocks, evolving rocks" is a whole chapter dedicated to rocks that have been built by living organism. This chapter covers a wide range of rocks, from all Eras, ranging from stromatolites to worm-holes through cliffs made of chalk and ancient reefs. This chapter will give to any reader the opportunity to see rocks through different eyes. The author then brings us back to the solar system. He sums up the limited knowledge we have of the rock-forming planetary bodies of our solar system, and brings us beyond with two paragraphs dedicated to rock-forming bodies outside the solar systems. The last chapter, "Human made rocks", proposes an original view of everyday objects and opens perspectives on the impact of human activities on Earth, and nicely concludes the book. Whatever your level of expertise of rocks and Earth processes, you will find in this book a source of inspiration and knowledge allowing you to better understand the planet we all live on.