Biomineralization: The Living Aspect of Mineralogy

Joshua I. Mathew

Quantitative Methods in Rocks and Minerals

Mr. Steven Teeter

Summer Ventures in Science and Mathematics

The University of North Carolina at Charlotte

Abstract

Biomineralization refers to the process in which biological systems influence the formation of minerals. It is a multidisciplinary study that links geology to organic and inorganic sciences. Although abiotic mineralization has been the main focus of geologists in the past, the study of biomineralization has emerged in the last century as a major field of science as scientists seek a better understanding of our evolutionary history. The purpose of this study is to investigate the principles of biomineralization, a process that is unfamiliar to many because of its complexity. This research describes the following topics: the process of biomineralization; characteristics of biominerals such as crystal size and structure; biomineralization in vertebrates and mollusks; and biologically formed magnetite crystals. Despite the extensive research that has been conducted since then, it is a field that is still very much in the process of gathering fundamental information. However, the potential for this field's contributions to science is astronomical. This researcher has designed an experiment to be conducted in the future with the necessary time and resources available. The purpose of this experiment is to investigate the effect of environmental conditions in which an organism lives on its mineral formation. The experimental methods are described in a section following the research.

Keywords: biomineralization, biominerals