

Understanding biomineralization in the fossil record

ALBERTO PÉREZ-HUERTA

Department of Geological Sciences, The University
of Alabama, Tuscaloosa, AL 35487, USA,
aphuerta@ua.edu

Biom mineralization is a set of highly conservative mechanisms that result from long-term evolutionary processes, leading to mineralization by organisms. As a consequence, recent biologically controlled biominerals share common properties, ranging from uniform particle sizes at nanoscale to a higher-order assembly into hierarchical structures that provide unique morphologies and mechanical properties. The identification of these properties in fossils would aid in determining whether preserved biomineralized structures are primary or diagenetic products. The aim of this talk is to present different conceptual approaches and methodologies to identify primary biomineral structures using examples from fossilized eggshells, corals, and arthropods. Overall, finding such primary structures in fossils contributes to a better understanding of the geological processes and biological adaptation to past environmental changes, while also offering a new perspective on the fundamental mechanisms underlying biomineralization.