

# Learn from Nature by Linking Earth Science to Natural Materialogy Development

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The earth is a giant system composed of inorganic materials, organic materials and biological materials and a huge factory for material synthesis and processing that has been running for 4.6 billion years. It contains abundant integrated information of material composition, structural properties, preparation process and service. How to learn from nature and obtain the key codes of natural material to improve the prediction ability and manufacturing ability of new materials? This is a new research field worthy of attention in material science.

In this study, the types and distribution of elements, natural mineral materials (sedimentary rock, magmatic rock, metamorphic rock) and natural biological materials (fiber, biological tissue, structural protein, biomineral) of earth system were systematically summarized, the core-shell structure in different scales (atom, earth, eggshell) and superwettability surface structure in various types in nature were discussed, the preparing and processing technologies of natural inorganic materials, such as separation and compaction, casting and sintering, condensation and baking, were analyzed. The research framework of Natural Materialogy was preliminarily established. The results of this study will be able to provide a reference for the construction of natural materials database in earth.