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Crystallization of calcium oxalate hydrates by interaction of calcite marble with fungus *Aspergillus niger*

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Abstract

The crystallization of calcium oxalates (weddellite and whewellite) by interaction of calcite marble with fungus *Aspergillus niger*, one of the most active stone destructors, was studied under in vitro conditions. The temporal development of acid production of fungus as well as the sequence of formation and morphogenesis of the growing oxalate hydrates crystals were investigated in detail. Furthermore, the relationships between morphology and growth conditions of crystals within the biofilms on the surface of carbonate rocks are discussed.

Keywords: Crystal growth, crystallization, whewellite, weddellite, morphogenesis of calcium oxalate hydrates, microscopic fungi, *Aspergillus niger*, acid production, oxalate patina, bioweathering