

# Attachment on mortar surfaces by cyanobacterium *Gloeocapsa* PCC 73106 and sequestration of CO<sub>2</sub> by microbially induced calcium carbonate

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## Abstract

Cyanobacterial carbonate precipitation induced by cells and extracellular polymeric substances (EPS) enhances mortar durability. The percentage of cell/EPS attachment regulates the effectiveness of the mortar restoration. This study investigates the cell coverage on mortar and microbially induced carbonate precipitation. Statistical analysis of results from scanning electron and fluorescence microscopy shows that the cell coverage was higher in the presence of UV-killed cells than living cells. Cells preferably attached to cement paste than sand grains, with a difference of one order of magnitude. The energy-dispersive X-ray spectroscopy analyses and Raman mapping suggest cyanobacteria used atmospheric CO<sub>2</sub> to precipitate carbonates.

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