

# Deposition of banded iron formations by anoxygenic phototrophic Fe (II)-oxidizing bacteria.

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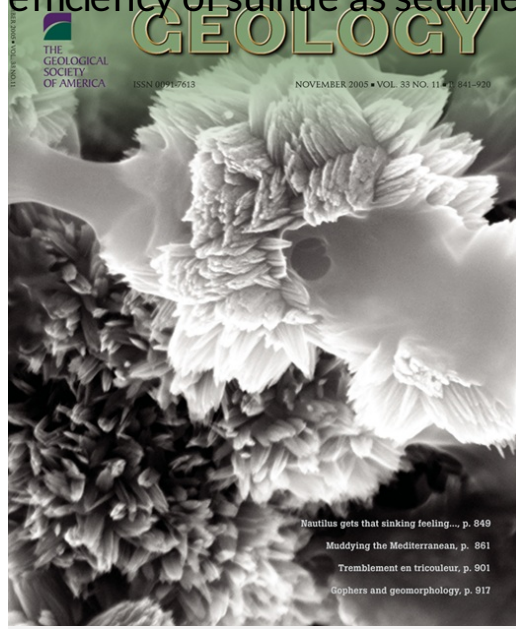
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Andreas Kappler; Claudia Pasquero; Kurt O. Konhauser; Dianne K. Newman

Geology (2005) 33 (11): 865-868.



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## Abstract

The mechanism of banded iron formation (BIF) deposition is controversial, but classically has been interpreted to reflect ferrous iron [Fe(II)] oxidation by molecular oxygen after cyanobacteria evolved on Earth. Anoxygenic photoautotrophic bacteria can also catalyze Fe(II) oxidation under anoxic conditions. Calculations based on experimentally determined Fe(II) oxidation rates by these organisms under light regimes representative of ocean water at depths of a few hundred meters suggest that, even in the presence of cyanobacteria, anoxygenic phototrophs living beneath a wind-mixed surface layer provide the most likely explanation for BIF deposition in a stratified ancient ocean and the absence of Fe in Precambrian surface waters.

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