Formation of Aragonite Under Diverse Environmental Conditions

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The objectives of this study are to precipitate aragonite crystals under various environmental conditions including: low pressure to high-pressure zones and in the presence and absence of methane. The aragonite is precipitated in a variable pressure device on a frosted glass slide and assessed with microscopic and geochemical analyses. The air space inside the device was flushed using either nitrogen or methane in order to create anoxic conditions. Additionally, some experiments were conducted with the addition of iron in order to further consume oxygen from the system. All aragonite have precipitated as hemispherical bundles of needle-like crystals (spherulites), which size varied from 5 to 100 microns in diameter. The precipitants were analyzed for carbon isotopes ($\delta^{13}C$) with isotopic ratio mass spectrometer. Results did not yield any significant difference between experiments conducted in the presence and absence of methane, suggesting no methane oxidation occurred in the system.