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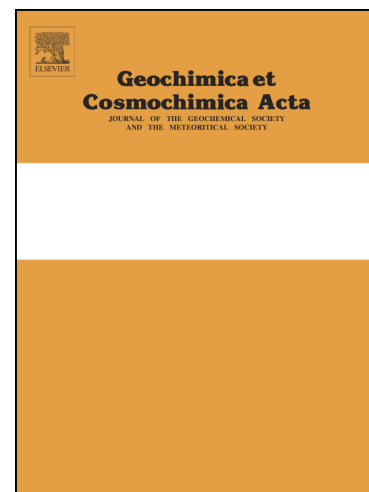
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Multiple sulfur isotope constraints on sulfate-driven anaerobic oxidation of methane: Evidence from authigenic pyrite in seepage areas of the South China Sea

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ABSTRACT

Multiple sulfur isotope signatures and secondary ion mass spectroscopy (SIMS) sulfur isotope compositions of pyrite from two seafloor sites (DH-CL11 and HD109) in seepage areas of the South China Sea were measured in order to study isotope effects of sulfate-driven anaerobic oxidation of methane (SO₄-AOM). The multiple sulfur isotopes of pyrite reveal variable ranges for both sites ($\delta^{34}\text{S}$: between -44.1 and -2.9‰ for DH-CL11 and between -43.8 and -1.6‰ for HD109; $\Delta^{33}\text{S}$: between 0.02 and 0.17‰ for DH-CL11 and between -0.03 and 0.14‰ for HD109). SIMS analysis reveals an extreme variability of $\delta^{34}\text{S}$ values (between -50.3 and

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