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High-pressure studies on the calcium-ion-sensitive fluorophore Fluo-4[1] ERIC W. FREY, PAUL URAYAMA, Miami University — Fluorescence-based methods for intracellular calcium ion sensing are well established at ambient pressure. Because calcium ions play a ubiquitous role in cellular signaling, extending techniques of intracellular calcium-sensing to high pressures would play an important role in understanding the large variety of piezophysiologic effects. Here, we characterize the intracellular calcium-ion-sensitive fluorophore Fluo-4 under hydrostatic pressures up to 500 atm (50 MPa). Using an EGTA/MOPS solution as a calcium-buffer reference, we investigate the pressure dependence of the reaction pK and determine the thermodynamic volume change associated with the Fluo-4 calcium-binding reaction.

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