

シアノバクテリア化石の顕生代海洋における pH プロキシとしての可能性 Fossil cyanobacteria as a potential pH proxy for Phanerozoic ocean

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Fossil cyanobacteria appeared in the most part of Phanerozoic era, and its abundance changed significantly through time. Their fossilization related to calcification in the living state, which requires optimum chemistry in the ambient water. Therefore, the fossil record of cyanobacteria potentially reflects past ocean chemistry. Recent study revealed that cyanobacterial calcification depends mainly on pH, dissolved inorganic carbon, Ca^{2+} concentration (Shiraishi 2012, GCA). Using well-established proxies of Ca^{2+} and partial pressure of CO_2 , oceanic pH was estimated from the fossil record of calcified cyanobacteria. Estimated range and trend of pH are similar to those of previous studies, but exhibited more frequent changes. In a future study, it is necessary to understand the relationship between CaCO_3 saturation state achieved by photosynthesis and calcification amount, in order to increase the reliability of estimation.