



Culture experiment with living foraminifera under laboratory high-CO₂ environmental condition

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Calcareous foraminifera have been considered as one of the important carbonate producer in marine environment. Their tests of calcium carbonate are broadly studied as paleo-environmental indicators by various scientists of earth science because their tests have been archived as numerous fossil in sediment for long time and valuable environmental information are brought by population, morphology and test chemistry. Even the foraminifers are belonging to protist, unicellular organism, they can precipitate a fine-decorated test. Their calcification mechanisms must be strongly controlled by biological activity. The knowledge about the cytological process on carbonate precipitation has been accumulated recently. In particular, mechanisms of calcium and carbonate ion uptake into foraminiferal cells from ambient seawater are of great interest. Our previous studies showed the potential to understanding the biomineralization of foraminifera by the application of fluorescent indicators. The development of fluorescent indicators allow us to visualize the spacial distributions of cytological chemical environment (e.g. pH and calcium concentrations) and organelles in living cell. Observed results show that foraminifera operate their biomineralization by fine controlling of intracellular environments. Acidified oceanic condition by antigenic high pCO₂ becomes global environmental problem in this decade. Then, we try to observe foraminiferal cellular environment under lowerized pH condition through laboratory culture experiments.