Biomineralization of barium at deep-sea hydeorthermal systems

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Biomineralization studies focused on deep-sea hydrothermal system in the North Knoll of Iheya Depression, Middle Okinawa Trough, and found Gram-negative archaea from the vent sites. Electron microscopy found barite ($BaSO_4$) particles on the cellular surface, and geochemical investigation has indicated that their crystal formation is inconsistent with the relationship between the morphology of barite precipitations and saturation state. Biomineralization of barium is related to the physiological traits of transport system associated with S-layers. Furthermore, it has been indicated by the archaea that S-layers flexible characteristics of self-assembly cases sheath formation for S-layers, in order to protect the cell from the surrounding environmental stress such as growth temperature.