

## Significance of serpentinization of lower crust in deep-sea hydrothermal biosphere

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Hydrothermal activity in the Archean-Ridge system has been considered to play a major role to maintain the oldest biosphere in early Earth. In the present ridge-system, hydrogen production in the serpentinized peridotite layer, is considered as major energy source. However, low temperature hydrothermal zone in the lower crust layer in the ridge has been recognized as hydrogen producing zone. Thickness of oceanic crust is less than 10 km in the present Earth. However, the thickness of Archean oceanic crust has been estimated as 50 km. That is, hydration process of oceanic crust in the Archean-ridge is significantly important. Hydration rate of the peridotite layer in the Archean ridge is less extensive than Phanerozoic because thicker oceanic crust prevents hydration in the peridotite layer. Lower crustal rocks of accreted oceanic plateau is one of the best sample to describe hydration process due to deep-sea-hydrothermal alteration because it is easy to observe huge outcrops and collect samples systematically in whole section. We have collected gabbroic rocks from Mikabu high P/T rocks in Toba area and from Ootoyo area, Japan because there are large scale trench cliffs in the mine. Serpentinization of olivine gabbro and troctolite and hydrogen production rate will be shown in the present poster.

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