

## **Layered Pattern Formation Controlled by Microorganisms**

TAZAKI, K. Department of Earth Sciences, Faculty of Science, Kanazawa University, Kanazawa, Ishikawa 920-1192, Japan.

In the natural water and sediments, there are numerous microorganisms, which vary considerably in chemical, physical and biological properties. A link exists between water, sediments and microorganisms in the natural environment. In particular, surface-adherent biomats and bacteria living within layered pattern structure that are unrecognized by conventional laboratory culture methods. The microorganisms contribute to forming minerals in which they are able to communicate in the colonic eco-system. Layered pattern induced by living bacteria to promote conditions that are favorable for increased biomineralization. I introduce several pattern formation processes at hot springs, mine area in Japan, and the Pre-Cambrian chart in Canada and Brazil. Many filamentous, coccus and bacillus type bacteria grow that show a developmental layered pattern of calcite, Fe-Mn minerals and Cu-minerals. The layered pattern appears to control heterocyst pattern formation through biomineralization development in biomats.

Hardened biomats reveals history of bio- and eco-systems in colonic environment.