

Layer cake pattern of life ?

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Microorganism can form layered structure which is one of layer cake pattern of life. The architecture of hardened biomats in hot springs, Satsuma low-Island is a good example of layered structure pattern, which can lead to the understanding of BIF and stromatolite. Electron microscopic observation shows that fibrous and bacillus type bacteria construct layer cake pattern through biomineralization on or in the cell. A living microbial fumarolic ferro-manganese precipitate growing in the seawater around an active volcanic island explains the mechanism of the pattern formation.

BIF in Adams Mine and Sudbury Mine, Ontario, Canada and Carajas Mine, Brazil contain mineralized various kinds of microorganisms in the pattern. TEM, SEM, EPMA and FT-IR observations demonstrate the processes in the coloured biomats observed in a host of environments.

This direct observation suggests that the formation of layer cake pattern requires not only a narrow set of physical or chemical conditions, but also biomineralization. In the biomats, bacteria have established certain symbiotic associations. There is no doubt that processes on the surface of the Earth are mediated by microorganisms.