

## **Iron serpentines in terrestrial and extra-terrestrial samples**

Iron serpentines are found in extra-terrestrial and terrestrial samples, in both natural and anthropic environments. They are characterised by complex, modular structures where several cationic substitutions occur. During their formation,  $H_2$  is generated as a consequence of iron oxidation in presence of water. For this reason, they are considered to have supported  $H_2$ -based microbial communities and contributed to fluxes of abiotic methane and other hydrocarbons in the Earth's crust. This leads to hypothesize a possible relationship between the Fe-serpentines and the conditions favorable for the evolution of organic matter in the Solar System, which made the life possible on the Earth.

Nowadays the formation conditions and stability fields of these minerals are still poorly understood, and a detailed crystallographic/cristallochemical characterization is often lacking. Several studies are carried out in the last years (using hydrothermal synthesis, electron diffraction microscopy, etc.) to know more about these interesting minerals.

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