Rocks, Minerals, PrebioticChemistry and Geobiotropy

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This presentation is about geobiotropy which is the evolution of rocks in symbiosis with prebiotic chemistry. It is considered in the absence and presence of oxygen.

Rocks allow the concentration of simple molecules such as H_2, CO_2, CO, N_2, H_2O. It is shown, with thermodynamic calculations and analyses, that the anoxic oxidation of rocks, containing Fe(II)Mg-Silicates and Fe(II)-Monosulfides, during water-rock interaction, may be a necessary process for triggering prebiotic synthesis. Geobiotropic signatures are proposed as a function of T, P and pH and some terrains on Earth and planetary bodies are discussed.

The oxic evolution of rocks is also presented. The particular case of fluid inclusions located inside pores of uranium-containing rocks is discussed. An analysis of the organic matter deposits inside such rocks is currently under preparation and may be presented at the conference. A scenario concerning prebiotic chemistry inside pores containing water, H_2, CO_2, N_2, and located next to radionuclides, is proposed.

M. P. Bassez (2017) Anoxic and Oxic Oxidation of Rocks containing Fe(II)Mg-Silicates and Fe(II)-Monosulfides as Source of Fe(III)-minerals and Hydrogen. Geobiotropy. *Origins of Life and Evolution of Biospheres,* on line: March 31, DOI 10.1007/s11084-017-9534-5, http://rdcu.be/qxSs (and refs of MP Bassez herein).