



## **Evaporitic simulator tracked by LIBS and Raman Spectroscopy**

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One of the geological scenarios that is the most suspected to be related with the possibility of the development of life are the evaporites. The continuous presence of water and chemical equilibria of the several elements in dissolution they have run for always like propitious places to development of possible forms of life similar to the Earth. The study of the processes of precipitation and crystallization of the different minerals, their sequences, their variations etc present great interest about could have established hypothesis on the phenomena that have had place at a scenario that only we have the final result of. This work presents the results of an experimental simulator of an evaporitic system with several particularities. On the one hand you present a sloping disposition, simulating the verges of a torrent or lagoon. The slopes of concentration in water's borders in this way get matches they happen to at the real places.

The second aspect is tracking in situ by Raman spectroscopy and LIBS. With probes and optical fibers is possible to determine at any moment the status of the process of crystallization and along of all of the surface, the physicochemical composition of the mineral deposits than precipitate in the system, in addition to be able to examine the composition of the dissolution simultaneously. All of this is possible without any alteration of the process.

This system has been and still is being applicable in the investigation of the precipitation of acid iron rich waters from the Rio Tinto river ( Spain ), considered like one referent in analogies relative to the mineralogy of Mars. We have been able to identify multiple minerals, in this case, principally iron sulfates, of varied stoichiometries, degrees of oxidation, hydration etc. As well, this system enables to establish what mineral phases precipitate first, as they get or lose hydration water, as they alter their oxidation grade as are exposed to the air, etc. This description of processes and sequences promises being very useful to elaborate hypothesis on the phenomena that have been able to create other evaporitic out of our planet.