



## **Extraction Protocols for Life Marker Chip-Style Instruments**

John Robert Brucato (1), Teresa Fornaro (1,2), Amaranta Pucci (1), and Sergio Branciamore (1)

(1) INAF, Osservatorio Astrofisico Arcetri, Firenze, Italy (jbrucato@arcetri.astro.it), (2) Scuola Normale Superiore, Pisa, Italy

Extraction experiments were performed to evaluate suitable sample-extraction and processing protocols that will be used by bioanalytical instruments like Life Marker Chip (LMC), focused on the detection of molecules associated with life that will be extracted from the Martian soil. LMC is an antibody microarray biosensor instrument with optical readout, which uses fluorescent labels, analogous to the expected biomarkers, to detect and quantify the presence of polar and non-polar biomolecules, extracted from the Martian soil. The success of the LMC biomarkers detection experiment is dependent on the sample extraction protocol. The currently recommended extraction procedure, optimized for aliphatic biomarkers, consists in sonicating the samples using as solvent system MeOH:H<sub>2</sub>O with surfactant, which respects all the tightening requirements associated to LMC biosensor. We have examined this procedure for a particular class of biomarkers, the nucleobases adenine, cytosine, uracil and hypoxanthine adsorbed onto martian analogues minerals.