SPACE LIFE SCIENCES SYMPOSIUM (A1)
Astrobiology and Exploration (6)

Author: Dr. Petra Rettberg
Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany, petra.rettberg@dlr.de

Dr. John Robert Brucato
Italy, jbrucato@arcetri.astro.it
Dr. Patricia Cabezas
European Science Foundation (ESF), France, pcabezas@esf.org
Dr. Jean-Louis Fellous
COSPAR, France, jean-louis.fellous@cosparhq.cnes.fr
Ms. Alissa HADDAJI
COSPAR, France, alissa_haddaji@alumni.brown.edu
Mr. Gerhard Kminek
European Space Agency (ESA), The Netherlands, gerhard.kminek@esa.int
Prof. Susan McKenna-Lawlor
Space Technology (Ireland) Ltd., Ireland, stil@nuim.ie
Dr. Elke Rabbow
Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Germany, Elke.Rabbow@dlr.de
Dr. Samuel Royle
Imperial College London, United Kingdom, s.royle@imperial.ac.uk
Prof. Mark Sephton
Imperial College London, United Kingdom, m.a.sephton@imperial.ac.uk
Mr. Jean-Charles Treuet
Eurospace, France, jean-charles.treuet@eurospace.org
Mr. Nicolas Walter
European Science Foundation, France, nwalter@esf.org
Dr. André Antunes
Edge Hill University, United Kingdom, antunesa@edgehill.ac.uk
Dr. Karen Olsson-Francis
Open University, United Kingdom, karen.olsson-francis@open.ac.uk
Dr. Stefan Leuko
DLR (German Aerospace Center), Germany, Stefan.Leuko@dlr.de

SEARCH FOR LIFE ON ICY MOONS – WHAT DO WE NEED TO KNOW FOR PLANETARY PROTECTION?

Abstract

Planetary protection aims at the preservation of our ability to study planets and moons of astrobiological interest as they exist in their natural state. The contamination with Earth organisms and organics (potential biosignatures) would give false positive results with severe impacts on future exploratory missions. In addition, the Earth's biosphere has to be protected in case of returning extraterrestrial samples. In the past COSPAR's planetary protection policy has mainly focused on the prevention of biological

contamination. While the requirements for Mars and the guidelines for their implementation are based on decades of experience the necessary measures for outer solar system bodies, here especially Europa and Enceladus, are less developed. They are based on conservative estimates of poorly known parameters. In the PPOSS project (EC H2020 Grant Agreement 687373) the actual knowledge of the environmental conditions on icy moons and other outer solar system bodies, the geological processes restructuring the icy moons' surfaces and the effects of these environmental parameters on Earth organisms with respect to their capability to survive and to replicate are critically looked at to identify knowledge gaps, recommend further scientific investigations to specify the requirements in more detail, to identify necessary technological developments and to suggest updates of COSPAR's planetary protection policy. These activities will be summarized in a Research White Book that will be available end 2017.