

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

Author: Dr. Matthias Dünne
OHB System AG-Bremen, Germany, matthias.duenne@ohb.de

Dr. Klaus Slenzka
OHB System AG-Bremen, Germany, klaus.slenzka@ohb.de

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

Dr. Klaus Rischka
Fraunhofer-Institut für Fertigungstechnik und angewandte Materialforschung, Germany,
klaus.rischka@ifam.fraunhofer.de

RECENT DEVELOPMENT OF A BIOINSPIRED ANTIMICROBIAL SURFACE - A PREVENTIVE
TECHNOLOGY FOR EXTENDED STAYS IN CONFINED SPACE ENVIRONMENTS**Abstract**

Challenges of spaceflight in LEO and exploration activities are manifold. E.g., the more far away from the Earth, the more increased stays in closed systems (e.g. ISS, lunar and Martian habitats) are a common characteristic. This includes increased but very specific microbial loads caused by high humidity and temperature levels and especially based on the group of humans brought to the closed habitat. Furthermore, there is a higher dependency from biological systems (CELSS) being sensitive against unintended microbial contamination, as well as a need of not transferring microorganisms out of spaceships to outer, habitable bodies and vice versa (COSPAR Planetary Protection Policy).

Proven technologies on Earth to counteract microbial contamination as biocides are not a suited alternative for space due to inherent problems of potential toxic effects on non-target organisms, unspecificity and resistancies to some microbial groups.

Bioinspired technologies as using antimicrobial peptides from nature (e.g. from frog skin etc.), immobilised on surfaces, are a suited alternative. High flexibility concerning the microbial target, low toxicity and an absence of resistancies are the main advantages.

An overview about goals and first results of a corresponding activity, funded by ESA, will be given at the symposium.