European Astrobiology Network Association

20 YEARS EANA

EANA LectureSeries

Online MODE

December 01, 2021 – 4 pm (CET)

W E B I N A R

Prospection for Fossil Life on Mars

Genesis, Taphonomy and Detectability of MISS in Clastic Deposits

Nora Noffke

Old Dominion University, Virginia, USA

For registration, please follow this link:
https://forms.gle/qo8aWSjPo859zAoK7

AbGradE

euroPLANET 2024 Research Infrastructure

For more information visit EANA web site: **http://www.eana-net.eu**

European Astrobiology Network Association

20 YEARS EANA

EANA LectureSeries

Prospection for fossil life on Mars

genesis, taphonomy and detectability of MISS in clastic deposits

December 01, 2021 | 4:00 pm (CEST)

Abstract: Clastic sedimentary rocks have long been overlooked with respect to the occurrence of fossil microbenthos. However, sandstones display a great array of sedimentary structures originally caused by microbial mats interacting with hydraulic and climatological parameters of their paleoenvironment. Modern microbial mats organize their complex internal microfacies by binding, they baffle and trap suspended particles to avoid burial, and they biostabilize their substrate in order to withstand erosion or desiccation. Such interaction results in characteristic microbially induced sedimentary structures (MISS), a group of microbialites of much different morphologies than stromatolites. Because Archean rocks on Earth and Noachian deposits on Mars have approximately the same ages, Archean fossils and biogenic structures constitute valuable biosignatures. The large volume of clastic deposits on Mars calls for the investigation of such lithologies on Earth. Archean sandstones include a wealth of MISS. This presentation discusses the significance of genesis, taphonomy and detectability of terrestrial MISS for the prospection of these biogenic structures in Noachian clastica on Mars.

Noffke 2013. Astrobiology 21, 866-892
Noffke & Awramik 2013. GSA Today 23, 4-9
Noffke et al. 2013. Astrobiology 13, 1103-1124

Nora Noffke

Nora Noffke is a sedimentologist interested in the interaction of microbenthos with clastic deposits resulting in microbially induced sedimentary structures (MISS). MISS allow insight into prokaryote evolution since the early Archean time. Such structures also serve the life exploration of comparable lithologies on Mars.

Noffke received her training in geology-paleontology at the University of Tuebingen, Germany. As a student of Dolf Seilacher, she specialized in ichnology of clastic deposits, conducting her Diploma research in the Arenigian of the Montagne Noire, France. For her PhD, she joined the working group of Wolfgang Krumbein and Gisela Gerdes, University of Oldenburg. Here, Noffke was exposed to research on modern microbial mats at the North Sea coast, the Red Sea, and the Mediterrean. Returning to the Montagne Noire, she detected fossil MISS. After a year of lecturing at the University of Frankfurt/M., Noffke migrated to the USA, where she studied with Andy Knoll at Harvard University, exploring Neoproterozoic rock successions with respect to MISS. In 2001, Noffke joined the faculty at Old Dominion University, Norfolk, Virginia, USA.

AbGradE

EUROPLANET 2024 Research Infrastructure