

EINLADUNG ZUM WIENER PHYSIKALISCHEN KOLLOQUIUM

The challenge of searching for life beyond Earth

Pascale Ehrenfreund

*Space Policy Institute, Washington DC, USA
Leiden Observatory, 2300 RA Leiden, NL*

Astrobiology connects space and Earth science to answer fundamental questions about the origin and evolution of life in our Solar System and possibly elsewhere. Astronomical observations have shown that carbonaceous compounds in the gas and solid state, refractory and icy are ubiquitous in our and distant galaxies. A surprisingly large number of molecules that are used in contemporary biochemistry on Earth are found in our Solar System environment and beyond. Laboratory measurements of the carbon fraction of carbonaceous meteorites reveal extraterrestrial organic compounds including amino acids, N-heterocycles, carboxylic acids as well as aliphatic and aromatic hydrocarbons. A fleet of robotic space missions currently targets planets, moons and small bodies to reveal clues on the origin of our Solar System and life beyond Earth. Extensive science activities in support of Mars exploration are performed worldwide in the laboratory, in the field and through simulation studies. Life detection strategies need to be robust to recover traces of biomarkers and are critically dependent upon the sensitivity of detection methods. Knowledge on the evolution of organic and biological material in space environment such as their photochemistry and preservation potential is crucial to advance life detection strategies and instrument development. This lecture will review the evolution of organic matter in space based on recent observations, space experiments and laboratory research and discuss the science and technology preparation necessary for robotic and human exploration efforts investigating habitability and biosignatures in our Solar System.

Montag, 04. Mai 2015, 17:30 Uhr
(ab 17:00 Uhr Kaffee)

Universität Wien
Fakultät für Physik, Lise-Meitner-Hörsaal
Boltzmannngasse 5, 1090 Wien

www.univie.ac.at/wpk