

**Plenary Talk**

PV VIII Wed 9:45 e415

**Organic chemistry in space and the challenge of searching for life beyond Earth** — ●PASCALE EHRENFREUND — [http://www.dlr.de/dlr/en/desktopdefault.aspx/tabid-10329/510\\_read-14467/](http://www.dlr.de/dlr/en/desktopdefault.aspx/tabid-10329/510_read-14467/)

Astrobiology connects space and Earth science to answer fundamental questions about the origin and evolution of life in our Solar System and possibly elsewhere. Carbonaceous compounds in the gas and solid state, refractory and icy are identified by astronomical observations in our Solar System, our and distant galaxies. Among them are a large number of molecules that are essential in prebiotic chemistry and used in contemporary biochemistry on Earth. Laboratory mea-

surements of the carbon fraction of carbonaceous meteorites reveal a variety of extraterrestrial organic compounds including amino acids, N-heterocycles, carboxylic acids as well as aliphatic and aromatic hydrocarbons. Since August 2014 the comet rendezvous mission Rosetta has monitored the evolution of comet 67P/Churyumov-Gerasimenko and observed numerous volatiles and complex organic compound on the cometary surface and in the coma. Small solar system bodies hold clues to processes that formed our solar system and probably contributed carbonaceous compounds during the heavy bombardment phase ~3.9 billion years ago to the young planets, a process which may have jump-started life's origin on Earth. 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.