

6.7.11**The limits of organic life in the universe: Questions and issues**

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**THEME 6:
THE EARLY EARTH AND
PLANETS****Session 6.7:****Astrobiology: The detection of life in
the Solar System**

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This session will cover one specific aspect of Astrobiology research, namely research and development dedicated to the detection of life in the solar system. We invite papers dedicated to detecting life in Earth environments as well as in the Solar System, especially on Mars and Europa. This is of particular interest considering that both ESA's Beagle II and NASA's Mars Exploration Rovers 1 and 2 are scheduled to land on the surface of Mars in January 2004 and have some initial analyses completed. Contributions to this session should cover aspects concerning the chemistry, geochemistry and organic geochemistry of life detection, demonstrated on examples from Earth's fossil record, on extraterrestrial materials or in life detection simulations, as well as technological or mission programmatic concepts for solar system exploration. We seek to gather contributions to present the community with the most up-to-date knowledge and information, and to foster exchange and discussion in this exciting field.

The search for evidence of past or present life on other solar bodies is an important goal of Astrobiology. However, this search and the design of experiments to detect biosignatures have been, for the most part, governed by a biochemical and molecular model that is based on the life that we know on Earth. The Earth centric model for life is based on a biopolymer architecture that includes nucleic acids and proteins, water as the solvent and a thermodynamically dissipative structure that exploits chemical energy gradients. Should we assume that life elsewhere would follow the Earth model and would it have biosignatures that we can detect? These questions will be addressed by exploring the limits of carbon life based on Earth's most extreme environments, the possibility of life with different biochemical and molecular properties than Earth life, the possibility for non-protein based catalytic systems and for novel metabolisms and the possibility for carbon-based life in solvents other than water.