Physics Colloquium

The Genesis Projects:
Laboratory Studies in Molecular Astrophysics from the First Star to the Beginnings of Organic Chemistry

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Abstract:
Interstellar chemistry plays an important role in the evolution of the universe from the dark ages to the formation of chemical life. I will discuss two particularly important link in this chain of chemical reactions. The first is the formation of H$_2$ in the early universe. Uncertainties in this process limit our ability to reliably model the formation of the first starts. The other link we study is the start of the cosmic pathway to life which begins in interstellar gas clouds where atomic carbon is "fixed" into molecules, thereby initiating the synthesis of the complex organic molecules that are eventually sequestered on planets. These reactions initiate not only the formation of organic molecules in the cosmos, but also provide some of the first threads knitting together atoms and molecules into solid material. Such processes are critical for the eventual formation of planets and may determine a major component of the organic chemistry that is present on their young surfaces. I will briefly review these motivations for our research and explain how we reproduce the relevant reactions through laboratory experiments.

Friday, January 22, 2010
4:00-5:00 pm
Leifson Physics Conference Room –LP208