ABSTRACT SYMPOSIUM NAME: Carbon in the Galaxy: The Formation of Complex Organics from the Outflow of Carbon Stars & Their Evolution - Oral

ABSTRACT SYMPOSIUM PROGRAM AREA NAME: [PHYS] Division of Physical Chemistry

CONTROL ID: 2106662

PRESENTATION TYPE: Oral Only : Do not consider for Sci-Mix

TITLE: Ice Chemistry in Interstellar Dense Molecular Clouds, Protostellar Disks, and Comet

AUTHORS (FIRST NAME, LAST NAME): Scott A. Sandford[1]

INSTITUTIONS (ALL):

1. Astrophysics Branch, NASA-Ames Research Center, Moffett Field, CA, United States.

ABSTRACT BODY:

Abstract: Despite the low temperatures (T < 20K), low pressures, and low molecular densities found in much of the cosmos, considerable chemistry is expected to occur in many astronomical environments. Much of this chemistry happens in icy grain mantles on dust grains and is driven by ionizing radiation. This ionizing radiation breaks chemical bonds of molecules in the ices and creates a host of ions and radicals that can react at the ambient temperature or when the parent ice is subsequently warmed. Experiments that similar these conditions have demonstrated a rich chemistry associated with these environments that leads to a wide variety of organic products. Many of these products are of considerable interest to astrobiology. For example, the irradiation of simple ices has been shown to abiotically produce amino acids, nucleobases, quinones, and amphiphiles, all compounds that play key roles in modern biochemistry. This suggests extraterrestrial chemistry could have played a role in the origin of life on Earth and, by extension, do so on planets in other stellar systems.

(no table selected)

(No Image Selected)