

N92-13659

A SILICONE COLUMN FOR GC ANALYSIS OF POLAR AND NONPOLAR CHEMICALS

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The investigation of the Saturnian system is being proposed jointly by NASA and ESA. The mission is scheduled for a launch in 1996. The mission provides an opportunity for close observation and exploration of Saturn's atmosphere, the complex Saturnian system of satellites and rings, Titan (Saturn's planet-sized moon), and Saturn's magnetosphere. The mission gives special attention to Titan which is blanketed by a thick, opaque atmosphere. An atmospheric probe will be deposited into the Titan atmosphere for *in situ* measurement during a slow, three hours descent to the surface. The results from this analysis may provide the information which is important to the research of chemical evolution, and the origin of life.

We have developed an analytical system as a part of the Titan Aerosol Gas Experiment (TAGEX), a proposed experiment for the Cassini mission. This system will use two highly sensitive detectors, MID (metastable ionization detector) and IMS (ion mobility spectrometer). Unfortunately, when commercial columns are utilized with these highly sensitive detectors, volatile components continuously bleed from the column and interfere with the detector. In addition, light columns must be able to separate polar and nonpolar organic chemicals within 10-15 minutes under isothermal conditions for the Titan mission. Therefore, we have developed a highly crosslinked silicone polymeric packed column which is able to efficiently separate amines, alcohols, and hydrocarbons with retention times less than 15 minutes at 100°C isothermal condition.