Abstract Submitted
for the GEC10 Meeting of
The American Physical Society

Gaseous Chemistry induced by a CCP RF discharge in a N2 CH4 mixture NATHALIE CARRASCO, THOMAS GAUTIER, LATMOS, Universite de Versailles St Quentin, ARNAUD BUCH, LGPM, Ecole Centrale Paris, ELLA SCIAMMA-O'BRIEN, CYRIL SZOPA, GUY CERNOGORA, LATMOS, Universite de Versailles St Quentin, IMPEC TEAM, LGPM COLLABORATION — The gaseous chemistry occurring in Titan's atmosphere is simulated with a CCP RF discharge in N2 - CH4 mixture. This experiment produces solid particles, which are assumed to be similar to Titan's aerosols. Here are presented results on the conversion of N2 and CH4 in more complex molecules. In situ Mass Spectrometry measurements show for example the production of hydrogen cyanide (HCN) and acetonitrile (CH3CN) in the gas phase. Gases produced in the plasma are also condensed in a trap cooled by liquid nitrogen downstream the plasma. It is shown that the amount of trapped gas increases with the percentage of CH4 injected in the plasma. Gas trapped are analysed by Gas Chromatography coupled to Mass Spectrometry. This analysis reveals hydrocarbons and a large amount of nitrile species (both way are detected until C5) in the gas phase.

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Date submitted: 12 Jun 2010 Electronic form version 1.4