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CAPS and INMS Major Accomplishments

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The Cassini-Huygens Ion Neutral Mass Spectrometer (Cassini INMS) and the Cassini Plasma Spectrometer (CAPS) have provided "discovery" science at Titan, Enceladus, Rhea/Dione, and throughout the magnetosphere of Saturn during the course of the mission. In this talk we will review some of the major scientific achievements: 1) the discovery of an extremely complex ion neutral organic chemistry in Titan's upper atmosphere that forms the building blocks for aerosol processes below, 2) the discovery of gases and grains emanating from Enceladus' cryo-geysers that tell us about chemical processes in an interior sea, 3) the first direct compositional measurements of sputtered icy moon surfaces, 4) the clearest example to date of the complex plasma interchange processes that occur in rapidly rotating magnetospheres of gas giants, initiating global dynamic processes that enable Saturn to shed the plasma from Enceladus' plume, and complete with a myriad of longitudinal and solar local-time variations, and 5) the dominance of Enceladus water outgassing as a source of magnetospheric plasma that stretches out to Titan and provides oxygen that can convert Titan's rich nitrile populations into amino acids.