

**Title: Exploration of the Saturn System by the Cassini Mission:  
Observations with the Cassini Infrared Spectrometer**

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**Abstract**

The Cassini mission is a joint NASA-ESA international mission, launched on October 17, 1997 with 12 instruments on board, for exploration of the Saturn system. A composite Infrared Spectrometers is one of the major instruments. Successful insertion of the spacecraft in Saturn's orbit for an extended orbital tour occurred on July 1, 2004. The French Huygens-Probe on board, with six instruments was programmed for a soft landing on Titan's surface occurred in January 2005. The broad range scientific objectives of the mission are: Exploration of the Saturn system for investigations of the origin, formation, & evolution of the solar system, with an extensive range of measurements and the analysis of the data for scientific interpretations.

The focus of research dealing with the Cassini mission at NASA/MSFC in collaboration with the NASA/Goddard Space Flight Center, JPL, as well as the research teams at Oxford/UK and Meudon Observatory/France, involves the Infrared observations of Saturn and its satellites, for measurements of the thermal structure and global distributions of the atmospheric constituents.

A brief description of the Cassini spacecraft, the instruments, the objectives, in particular with the infrared observations of the Saturn system will be given. The analytical techniques for infrared radiative transfer and spectral inversion programs, with some selected results for gas constituent distributions will be presented.