Cassini VIMS at Saturn: The first 6 months. R. H. Brown[1], K. Baines[2], G. Bellucci[3], B. Buratti[2], F. Capaccioni[5], P. Cerroni[5], R. N. Clark[6], A. Coradini[5], D. Cruikshank[7], P. Drossart[8], V. Formisano[5], R. Jaumann[9], D. Matson[2], T. McCord[10], V. Mennella[11], R. Nelson[2], P. Nicholson[12], B. Sicardy[8], C. Sotin[13], [1]Lunar and Planetary Laboratory, University of Arizona, Tucson, AZ, 85721, U.S.A., [2]Jet Propulsion Laboratory, California Institute of Technology, [3]Instituto Fisica Spatio Interplaetario CNR, [4]Istituto di Astrofisica Spaziale CNR, [5]U.S. Geological Survey, Denver, [6]NASA Ames, [7]Observatoire de Paris, Meudon, [8]Institute for Planetary Exploration, DLR, [9]University of Hawaii, HIGP/SOEST, [10]Osservatorio Astronomico di Capodimonte, [11]Cornell University, Astronomy and Space Sciences, [12]Laboratoire de Geophysique et Planetologie, Universite' de Nantes.

Introduction:

The Cassini Visual and Infrared Mapping Spectrometer (VIMS) is an imaging spectrometer on the Cassini spacecraft that covers the spectral range of 0.35-5.2 μm in 352 spectral channels, a nominal instantaneous field of view of 0.5 mrad and an image format of 64x64 pixels. It has completed it's first 6 months in orbit around Saturn. During that time it has made extensive observations of Saturn's rings, it's icy satellites, in particular Phoeba and Iapetus, and had 1 distant and 2 close flybys of Titan.

Results:

Results for the flyby of Phoebe show that it's surface is dominated by water ice and bound water, but it has significant amounts of ferrous-iron-bearing silicates, CO_2 as liquid or gaseous inclusions in minerals, organics, CN compounds and several as yet unidentified compounds. Phoebe's surface composition is consistent with other outer solar system objects

Results for Iapetus show the presence of water ice, bound water, CO_2 complexed in a similar fashion as on Phoebe, organics and several as yet unidentified surface components.

Saturn's rings are seen by VIMS to be composed of almost pure water ice with small amounts of contamination/coloration that seem to be more abundant in the inner portion of Saturn's rings and in the ring gaps. VIMS has detected radial structure in the composition of Saturn's rings all the way down to the roughly 2-km resolution limit of the data obtained during Saturn Orbit Insertion (SOI).

Titan is shown to have strong atmopheric fluorescence at 3.3 μm due to methane, a variegated surface of roughly a factor of 2 in albedo contrast that seems mostly due to textural differences rather than compositional differences, and definite evidence of topography and geologic structures.

All of these results and more will be discussed.