

SPACE EXPLORATION SYMPOSIUM (A3)
Solar System Exploration (5)

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SPECTROMETERS AND IMAGING CAMERAS FOR PLANETARY REMOTE SENSING

Abstract

The paper is an overview of instruments for remote sensing (Jupiter, Mercury) and in-situ (Mars) planetary exploration currently under development at SELEX Galileo Space Line of Business (SG). Main technologies are outlined; further information can be found on participants web-sites. SG have a well based tradition of instrumentation for planetary exploration. The first contribution has been for the Cassini-Huygens mission to Saturn and Titan. Under ASI contract, SG provided two Principal Investigator (PI) instruments, including the VIS channel of the Visible Infrared Mapping Spectrometer (VIMS). Within Rosetta, the ESA mission to the comet 67P/Churyumov-Gerasimenko, SG have been the Industrial responsible for three Italian PI experiments, including the Visible IR Thermal Imaging Spectrometer (VIRTIS) for VIS/NIR remote sensing. Within ESA mission Venus Express to Venus, SG provided an-

other VIRTIS Spectrometer; launched on November 2005, VIRTIS is providing images and spectra of the Venusian atmosphere, from the top up to down nearly to the surface. More recently, SG have realized for ASI the VIR-MS imaging spectrometer for NASA Dawn mission; launched on September 2007, the VIR-MS will perform the VIS/NIR remote sensing of the asteroids Vesta (2011) and Ceres (2015). This paper will focus on SG's latest contribution to the missions: Juno, BepiColombo and Mars 2018. Following an agreement between ASI and NASA/JPL on the Juno mission to Jupiter, SG have been requested as the industrial partner for the PI instrument Jovian Infrared Auroral Mapper (JIRAM), an instrument which performs spectroscopy and imaging in the 2 – 5 micron band simultaneously by the use of a double focal plane. The launch of Juno is scheduled on August 2011. JIRAM is devoted to the study of the inner structure and the atmosphere of Jupiter. As a contribution to ESA MPO Orbiter for BepiColombo mission to Mercury, ASI has selected SG to develop a suite of optical sensors called SIMBIO-SYS for the observation of Mercury surface that includes: an high resolution camera (HRIC), a stereo imaging camera (STC) and a VIS/IR hyperspectral imager (VIHI). Phase C/D work is on-going. Finally, on the Mars Exploration side, design and critical bread-boarding activities have been performed on the drilling system DIBS and on the spectrometer Ma-MISS (MArs Multispectral Imager for Subsurface Studies) which is embedded in the Drill tip for in situ Mars exploration. MA-MISS will observe the lateral wall of the borehole generated by the DIBS. Phase C/D for Ma-MISS under ASI contract is in progress.