



Phobos composition and origin: from OMEGA to MicrOmega

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Following the pioneering compositional remote observation of Phobos made by ISM/Phobos, OMEGA/Mars Express than CRISM/MRO have pursued the high resolution mapping of Phobos with VIS/NIR hyperspectral imagery, down to a sub-kilometer spatial sampling. In the spectral range (0.4 – 5.1 μm), no definite detection of aqueous or carbonaceous compounds have been made. We will present an update of the results obtained so far.

In parallel, we are developing a compact NIR hyperspectral microscope, capable of acquiring the full spectrum of samples a few mm large, with a spatial sampling of $\sim 20 \mu\text{m}$. Mounted on the Phobos Grunt lander, planned to be launched in 2011, it will analyze the surface soil of Phobos at a grain scale, with the capability of identifying both the composition of the mafic and altered minerals, and water-rich or carbon-rich species possibly trapped within the matrix of the grains. We will describe the instrument delivered as the flight unit, and the results obtained during its ground calibration compared to those of simulations experiments performed using IR microscopes.

We will finally discuss some perspectives of the global compositional characterization of Phobos, from its macroscopic down its microscopic scale, obtained from NIR hyperspectral reflectance, in the framework of the Phobos origin.