

## THE OMEGA/MARS EXPRESS INVESTIGATION

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OMEGA is a visible/near infrared spectral imager, designed to map the Mars surface and atmosphere from the Mars Express Orbiter. It will characterize all surface (minerals, ices and frosts, soil) and atmospheric (gas and aerosols) constituents by analyzing the solar diffused light, and to a lesser extent the planetary emission light, from 0.5 to 5.2  $\mu\text{m}$ , spectral range in which most potential major and minor species have diagnostic features, resolved with a spectral sampling 7 - 20 nm large. With a 1.2 mrad IFOV, OMEGA will map the entire surface with a 2-5 kilometer spatial sampling from altitudes 1500-4000 km, and characterize a few percents of the surface at resolutions better than 400 m, from periapsis. Such resolutions have never been achieved so far : OMEGA should in particular unambiguously identify the various types of rocks (silicates, oxides, hydrated minerals, carbonates etc.), with major outcomes for understanding the planet evolution on geological to seasonal timescales. As for the atmospheric compounds, CO<sub>2</sub>, CO and H<sub>2</sub>O abundance will be measured in each resolved pixels; OMEGA will also identify and map the vertical distribution of aerosols (H<sub>2</sub>O and CO<sub>2</sub> ices, minerals, organics). Altogether, OMEGA should provide key clues for deciphering the past geological and climatic Mars history, and its contemporary meteorological evolution.