Phobos composition: a reappraisal, based on Omega/MEx observations

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The imaging spectrometer OMEGA [1] operates in the VIS-NIR range, covering the (0.35 µm to 5.1 µm) range in 352 contiguous spectral channels. This spectral range has been chosen as it includes diagnostic signatures of most surface mafic and hydrated minerals, frosts and ices. With a 1.2 mrad IFOV, the footprint varies from 40 m when imaging from 40 kms, up to 4.8 km from an altitude of 4000 km: this allows a global spectral coverage of Phobos to be achieved, at various spatial resolution.

Along its 16 years of orbital operations, Mars Express has performed tens of close flybys of Phobos, at altitudes down to ~ 50 kms. OMEGA has acquired unprecedented compositional data sets, in both the visible and the near-infrared spectral range. We shall present and discuss these observations, as witnesses of Phobos origin, with their relevance to the upcoming MMX JAXA mission.