Geophysical Research Abstracts, Vol. 8, 07780, 2006
SRef-ID: 1607-7962/gra/EGU06-A-07780

The geochemistry instrument package facility: a low-resource payload for in-situ planetary analysis.

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The Geochemistry Instrument Package Facility (GIPF) was developed by von Hoerner & Sulger to be incorporated in a small rover based on the Nanokhod design. The reference mission for this development was Bepi-Colombo but the concept can easily be adapted for other solid bodies of the solar system.

The GIPF currently includes three instruments: an Alpha-Particle X-ray Spectrometer (APXS), a Mössbauer spectrometer (MIMOS II) and a Close-Up Camera (MIRO-CAM). The APXS and the MIMOS II benefit from the heritage of equivalent instruments, the latest being on board of the Mars Exploration Rovers, but they were further miniaturized.

The overall goal of this development was to design a payload with reduced size (the payload has a mass of 900 g) and power consumption (2-3 W) for in-situ studies of planetary environment.

This suite of three instruments shows an interesting synergy by combining the analysis of elemental and mineral composition of samples with the visual information recorded by the camera.

The GIPF will undergo a series of tests in the SCI-A lab to characterize its performances. Eventually, the Laser Mass Spectrometer would be also implemented in the GIPF and the results obtained with those four instruments will be compared and correlated.