



AMIE SMART-1: review of results and legacy 10 years after launch

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The Advanced Moon micro-Imager Experiment (AMIE) camera was launched in September 2003 onboard the ESA SMART-1 spacecraft. We review the technical characteristics, scientific objectives and results of the instrument, 10 years after its launch.

The AMIE camera is an ultra-compact imaging system that includes a tele-objective with a $5.3^\circ \times 5.3^\circ$ field of view and an imaging sensor of 1024×1024 pixels. It is dedicated to spectral imaging with three spectral filters (750, 915 and 960 nm filters), photometric measurements (filter free CCD area), and Laser-link experiment (laser filter at 847 nm).

The AMIE camera was designed to acquire high-resolution images of the lunar surface, in white light and for specific spectral bands, under a number of different viewing conditions and geometries. Specifically, its main scientific objectives included: (i) imaging of high latitude regions in the southern hemisphere, in particular the South Pole Aitken basin and the permanently shadowed regions close to the South Pole; (ii) determination of the photometric properties of the lunar surface from observations at different phase angles (physical properties of the regolith); (iii) multi-band imaging for constraining the chemical and mineral composition of the surface; (iv) detection and characterisation of lunar non-mare volcanic units; (v) study of lithological variations from impact craters and implications for crustal heterogeneity.

The study of AMIE images enhanced the knowledge of the lunar surface, in particular regarding photometric modelling and surface physical properties of localized lunar areas and geological units.

References: <http://scholar.google.nl/scholar?q=smart-1+amie>

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J.-L. Josset, P. Plancke, Y. Langevin, P. Cerroni, M. C. De Sanctis, P. Pinet, S. Chevrel, S. Beauvivre, B.A. Hofmann, M. Josset, D. Koschny, M. Almeida, K. Muinonen, J. Piironen, M. A. Barucci, P. Ehrenfreund, Yu. Shkuratov, V. Shevchenko, Z. Sodnik, S. Mancuso, F. Ankersen, B.H. Foing, and other associated scientists, collaborators, students and colleagues.