

LENA Imaging on the Moon with the SARA Instrument

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Moon does not possess a global magnetosphere or an extended atmosphere. Therefore, solar wind ions can directly precipitate onto the Moon surface resulting in the production of low energy neutral atoms (LENAs) through sputtering and backscattering processes. LENAs in this context are defined as atoms in the energy range of 10 eV to a few keV. In this paper we will discuss scientific issues that can be addressed with the *SARA* 'Sub-keV Atom Reflecting Analyzer' instrument: a LENA imaging mass spectrometer working in the energy regime 10 eV–3 keV. The SARA instrument will fly aboard the Indian Lunar mission Chandrayaan-1, a polar ~100 km orbiting spacecraft, which will be launch in 2007 end. The SARA instrument consists of three major subsystems: LENA sensor, solar wind monitor, and DPU, and it is being built in collaboration between the participating institutes. Remote sensing of sputtered LENAs by the SARA can be used to study surface composition, lunar exosphere sources, solar wind surface interaction, surface magnetic anomalies and associated mini-magnetospheres, as well as space weathering on the Moon.