

Isotopic mass analyses on the Moon by small mass spectrometer: (1) A mission proposal for a future lunar exploration

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We are proposing isotopic mass analyses on the Moon for a future lunar exploration mission. Purpose of isotopic mass analyses is to understand the origin and evolution of the moon by measuring the isotopic composition of volatile elements (H, He, C, N, Ne, Ar) of the various lunar materials from different areas. Systematic isotopic measurements using mass spectrometer will reveal spatial and periodical variation of lunar isotopic composition and will provide information about the behavior of volatile elements also thermal history of the moon. The mission instrument consists of a double-focusing mass spectrometer having laser sampling system which will be loaded on a lunar rover to measure the isotopic composition of lunar surface rocks and regolith.