

HIGHLIGHTS AND BREAKTHROUGHS

New evidence for lunar basalt metasomatism by underlying regolith

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Abstract: Earth-like δD values reported from lunar mare-basalt apatites have typically been interpreted to reflect the intrinsic isotopic composition of lunar-mantle water. New data indicates that some of these basalts are also characterized by having experienced a slow cooling history after their emplacement onto the lunar surface. This suggests that these basalts may have experienced metasomatism by fluxes generated during the degassing of the lunar regolith induced by the long-duration, high-temperature residence times of overlying basalts. **Keywords:** Lunar volatiles, basalt metasomatism, lunar petrology, hydrogen isotopes