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Comparing the Sm-Nd and Lu-Hf isotope systematics of eucrites and angrites

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On ^{176}Lu-^{176}Hf isochron diagrams, meteorites often scatter around a trend that corresponds to an age older than the solar system. This feature, indicative of open-system disturbance, has been observed for eucrites [e.g., 1-2] and angrites [e.g., 3-4] at both the mineral- and bulk rock scales. In addition to Lu-Hf, we now present ^{147}Sm-^{143}Nd data for the same digestion aliquots of mineral separates and bulk fractions from the eucrites Millbillillie and Piplia Kalan, and the angrites NWA 4590, NWA 4801, and D'Orbigny. Although the scatter is more distinct for Lu-Hf, it is also evident in Sm-Nd isochron diagrams. In contrast to earlier studies [4-7], we argue that the disturbances result from recent parent-daughter fractionation due to either 1) terrestrial weathering or contamination, or 2) commonly used sample handling procedures.

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