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**REE signatures in meteoritic Ca-phosphates.**

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Merrillite (Mer) and apatite (Ap) are important accessory phases in most meteorite groups as well as major REE carrier phases [1, 2]. Within the framework of the SPP1385 over 600 Ca-phosphate grains were identified and documented by SEM and EPMA and the REE concentrations of 300 selected grains were analyzed by SIMS (NORDSIM) and/or LA-ICP-MS (WWU). Both minerals dominate the bulk REE budget in the analyzed samples. In chondrites they show lower REE contents than in achondrites, and concentrations in merrillite mostly exceed those in apatite by an order of magnitude. Their main REE signatures are shaped during their formation: Apatites either exhibit (1) flat patterns often with negative Eu anomalies and slight HREE depletion or (2) they feature LREE enrichment with slight Eu anomalies, either positive or negative but consistent within each sample. Merrillite REE patterns are either: (1) flat with a distinct negative Eu anomaly and slightly HREE depleted; (2) unfractionated with no pronounced anomalies or (3) highly LREE depleted with a minor negative Eu anomaly.

[1] Brearley, A. J. & Jones, R. H. (1998) Rev. in Mineral. 36:3-1, 3–398. [2] Shearer, C. K. et al.

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