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1322 - REE mineralization of the Ouro Fino Intrusive Suite, SW border of Amazonian Craton – Rondônia, Brazil.

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The Ouro Fino Intrusive Suite (OFIS) is a peralkaline alkali feldspar granite, with alkali to alkali-calcic affinities and geochemical characteristics of intra-within-plate granite. Located on the southwestern border of the Amazonian Craton, the OFIS magmatism (1.34 Ga) could be the result of Rondonian-San Ignacio orogenic cycle or the initial rifts of the Grenvillian ocean. The chondrite normalized REE patterns of the OFIS show Eu anomalies and LREE prevail over the HREE ($LaN/YbN = 8.7$). The lithotypes are predominantly hypersolvus aegirine-arfvedsonite alkali-feldspar granites, with some varieties to syenogranites, monzogranites and leucocratic alkali feldspar granites. Locally, some late porphyritic quartz-rhyolites fill late cooling fractures. The analyzed samples of the OFIS show strong evidence of a REE-Zr-Hf mineralization, with an average total rare-earth oxides content of 0.84% and Zr and Hf average contents of 8607 ppm and 259.9 ppm, respectively. Micropetrography allied to EPMA technique were used and identified some exotic minerals. The micropetrography identified zircon and titanite as accessories. EPMA analyses on polished thin-sections identified elpidite, Ca-elpidite and anhedral zircon, herein defined as hydrothermal-deuteric zircons. Mineral chemistry results indicate that the REE (La, Ce and Y), Zr and Hf occur preferentially in the zirconosilicates. However, sodic amphiboles and pyroxenes display some low content of La and Ce. In the rock matrix, elpidite reach proportions up to 5% and zircon occur only as accessory. The total contents of the analyzed REE, Zr and Hf in the elpidite and Ca-elpidite are in average 0.95%, 14.7% and 0.3%, respectively. In zircon, average contents are 4.1%, 38.2% and 0.8% respectively. In conclusion, elpidite, Ca-elpidite and zircon are the main source to the REE budget of the OFIS granites. In lower contents, REE occur also in the Na-amphiboles, Na-pyroxenes and titanite. REE associated to phosphates, carbonates and fluoride are quite seldom.