Iron oxyhydroxides inclusions in dolomitic banded iron formations (exemple from the Cauê Formation, Quadrilátero Ferrífero, Brazil)

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Mineralogical analyzes (DRX, Micro-Raman spectroscopy and FIB-TEM analyzes combined with FTIR spectroscopy) identified micrometric euhedral hematite and nanometric inclusions of mainly hematite and minor iron oxyhydroxides (goethite and/or ferrihydrite) in dolomitic banded iron formations of the 2.4 Ga Cauê Formation, Itabira Group, Brazil. The latter are well crystallized and precipitated probably from Fe- (Si-) bearing fluid inclusions. Usually, the iron hydroxide inclusions were then transformed to hematite, and only preserved, when silica traces -within or adsorbed on them- act as a protection against transformation into hematite. Curie balance analysis on whole rock reveals, besides hematite, a new magnetic mineral at temperatures from 690°C to 900°C. This is related to the thermal decomposition of dolomite, which allows the transformation of the encapsulated goethite and/or ferrihydrite into magnesioferrite or Mg-rich maghemite. Their origin is likely related to diagenetic processes, and they are not a residue resulting from the dissolution of dolomite in parent dolomitic itabirite protore, as observed for ferrihydrite present in altered itabirite[1].

[1] Spier, de Oliveira, Rosière & Ardisson (2008), *Mineralium Deposita*, **43**, 229 – 254.