C-minerals in high pressure manganiferous quartzites

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In the high-pressure units of the Western Alps, manganiferous quartzites are often associated to metabasites and serpentinites, being derived from siliceous deposits of the Tethyan Ligure-Piemonte oceanic basin. The most famous eclogite-facies manganiferous quartzites occur at Cignana (Valtournanche) and Praborna (Saint-Marcel valley) showing respectively the presence of microdiamond the former, and absence of microdiamond the latter. Other manganiferous quartzites from other high-pressure units of the Western Alps were studied combining optical microscopy and micro-Raman to check the presence of C-minerals under diamond or graphite crystallographic structure. C-minerals were searched in the manganiferous quartzites transposed with eclogite-facies metabasites of the Monte Nero (Val Soana) and Grivola units (Loson pass and Punta di Loie, Cogne), and from blueschist-facies quartzites of Punta Creya (Cogne), Plateau Rosa (Cervinia) and Saint Barthelemy, hoping to find almost graphite minerals. However, till now, nor microdiamond neither crystalline graphite has been found, however, dark organic material is abundant in all these rocks and well visible in thin sections (Fig. 1; thin sections were prepared without the use of microdiamond and graphite for polishing). Crystalline graphite was observed only within titanite in a manganiferous garnet-pyroxene quartzite transposed together with eclogite-facies metabasites from Montestrutto (Sesia Lanzo unit). Given this evidence, our study is addressed to solve the following question: which is the reaction or process driving the transformation of dark organic material in C-crystalline minerals?

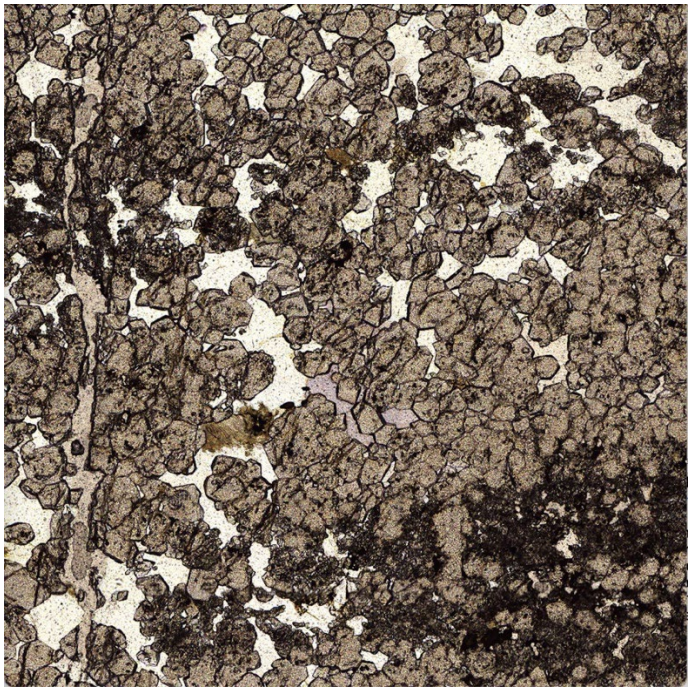

Figure 1- Dark material in Cignana pink garnet aggregates