

P-T-t path of ultrahigh temperature metamorphic rock from Sri Lanka

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The local mineral assemblage sapphirine + quartz +/- spinel indicative of ultrahigh temperature metamorphism occurs within garnet porphyroblasts in a pelitic granulite (Sp. D1pt-1) from near Gampola in the southern Kandy district, Sri Lanka. The constituent minerals of the rock are sillimanite, kyanite, sapphirine, spinel, cordierite, garnet, orthopyroxene, biotite, plagioclase, K-feldspar, Ilmenite, magnetite, apatite, monazite, and zircon. Garnet porphyroblasts also carries such a distinct local mineral assemblage sapphirine + kyanite +/- spinel. The mineral assemblage sillimanite + aluminous orthopyroxene + quartz is commonly present in the matrix, replacing garnet and/or being replaced by cordierite. Ilmenite containing hematite lamella and magnetite are found not only in the matrix but also within garnet and indicate relatively high oxygen fugacity throughout the rock. The sillimanite + orthopyroxene intergrowths occasionally show the mode of occurrence that suggests they are inclusions in garnet. Monazite and zircon occur in association with the various local mineral assemblages mentioned above. SHRIMP and CHIME dating of the minerals showing different modes of occurrence would be significant in unraveling the P-T-t path of the rock. It may also be useful to reveal the relationship between ultrahigh-pressure and ultrahigh-temperature metamorphism, because the local sapphirine + kyanite + garnet +/- spinel association may have formed upon decompression after Mg-rich staurolite or chloritoid which are common in ultrahigh pressure metamorphic rocks.