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Charnockitic magmatism in Kondapalle, Eastern Ghats belt, India

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Orthopyroxene-bearing felsic and mafic charnockites are major components of the Kondapalle complex in the southern sector of the Eastern Ghats belt. Besides the clearly intrusive contacts between the charnockitic and the Khondalite rocks, transitional, migmatite-type contacts also occur. The occurrence of clinopyroxene exsolution, perthite, antiperthite, Pyrrhotite and the relict magmatic textures along with thermo- barometric calculations suggest crystallization at elevated temperatures. Field evidence, supplemented by mineralogical, textural, and chemical data of the Kondapalle Charnockite suggests the Kondapalle charnockites are of primary igneous origin. The felsic charnockites show similarities with high Ba-Sr grantoids with low K_2O/Na_2O ratios and mafic charnockites with high Ba-Sr grantoids with high K_2O/Na_2O.The formation of these rocks is best explained by partial melting of deep continental crust under the dry conditions of granulite facies. This study shows that charnockitic rocks of igneous origin may be much more common in granulite facies metamorphic terranes than hitherto recognized