

## **PETROLOGY AND GEOCHEMISTRY OF LAMPROPHYRE FROM NAMAKKAL AND DHARMAPURI DISTRICTS, TAMIL NADU**

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### **Abstract**

Petrological and geochemical characters of two new lamprophyre intrusives: one associated with older gneisses around Sankari/Tiruchengode granite near Andipalayam village, south-west of Tiruchengodu town, Namakkal district within the Cauvery Shear Zone, and the other located west of Thithiyobanahalli village associated with syenite of Pikkili Alkaline Complex, Dharmapuri district within the Southern Granulite Terrain, are discussed. Field observations imply their generation as small volume melts which were later emplaced into their host rock via pre-existing discontinuities. They are composed of phenocrystal hornblende, clinopyroxene and biotite enclosed within a matrix made up of second generation mafic phases, alkali-feldspar, sodic-feldspar and plagioclase. Based on modal mineralogy, both these lamprophyres are termed as minette. Major and mafic mineral compatible trace elements reflect the influence mantle while the incompatible elements, LILE, HFSE and REE suggest a subduction environment. Trace elements in the discussed lamprophyres suggest involvement of crustal and mantle components in their genesis. Trace element ratios imply different degrees of partial melting from dissimilar protoliths/sources. The recorded geochemistry of these lamprophyres implies that they are not co-magmatic. These lamprophyres are suggested to be derived from evolved hydrous parental melts unrelated to the parental melts of their host rocks. They are also not products of late stage or residual hydrous melts of their host rocks. The lamprophyres described in this paper are related to a tectonic setting dominated by 'collisional arc' related subduction zones. Their presence within the Southern Granulite Terrain and Cauvery Shear Zone has partially established their use as tectonic markers and are assumed to be the last set of hybrid mafic intrusives emplaced within their host rocks.

*Keywords:* Minette Lamprophyre, Southern Granulite Terrain, Cauvery Shear Zone, Geochemistry and Petrogenesis.