Geochemical, Rb-Sr and Sm-Nd Isotopic systematic studies on the evolution of the Closepet Granite, Dharwar Craton, India.

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Closepet Granite represents a series of plutons that intruded 2560 to 2510 Ma ago along N-S trending, 400 km long and 20-30 km wide zone in the Dharwar Craton of south India [1, 2, 3]. Detailed geochemical and Sr and Nd isotope studies were carried out to better understand their petrogenesis.

Closepet Granites are metaluminous, I-type, and mainly granites and granodiorites. LREE enriched and nearly flat HREE chondrite normalized patterns with small negative Eu anomaly are shown by granodiorites. Whereas, granites have variably LREE enriched and nearly flat HREE patterns with negative Eu anomaly. Both show negative Nb, Ta, Sr, Ti and Sc anomalies in primitive mantle normalized plots.

The granites have ε_{Nd} values ranging between -6.65 to -2.66 and granodiorites have -8.22 to -4.41. The Closepet granite and granodiorite have unusually high ε_{Sr} values (>600) which indicates loss of Rb from the Closepet granites and granodiorites after their crystallization due to hydrothermal fluid activity or metamorphism. Geochemical and Nd isotope modelling suggests that Closepet granite and granodiorite magmas formed by partial melting of mixed sources made up of different proportions of juvenile basalt and ~3.5 Ga old continental crustal components.

The Closepet Granites are similar in physical shape, mineralogy and geochemical characteristics to Sierra Nevada and Cordillera granitoid batholiths indicating their formation in continental arc settings**.**

[1] Friend and Nutman (1991) *J. Geol. Soc. India* **38** 357–368. [2] Moyen *et al.,* (2001) *Precambrian Research* **112**, 87–105. [3] Jayananda *et al.,* (1995) *Contributions to Mineralogy and Petrology*. **119** 314–329.