Relict Neoarchean silico-carbonatite from Elagiri alkaline complex, Southern Granulite Terrane, India

Jyotisankar Ray[1,2,*], Qiong-Yan Yang[3,4], Liangshu Shu[5], M. Santosh[3,4], Anindita Dey[1,6], Biswajit Ghosh[1], Payel Dey[1], Sohini Ganguly[1] and Sarmistha Mukhopadhyay[1]

[1]Department of Geology, University of Calcutta, 35 Ballygunge Circular Road, Kolkata 700 019, India
[2]Department of Geology, Amity University Punjab, Mohali 140 306, India
[3]School of Earth Sciences and Resources, China University of Geosciences Beijing, 29 Xueyuan Road, Beijing 100083, China
[4]Department of Earth Sciences, University of Adelaide, SA 5005, Australia
[5]State Key Laboratory for Mineral Deposits Research, Nanjing University, Nanjing 210093, China
[6]Department of Geology, Delhi University, Delhi 110 007, India

Here, we report the occurrence of relict Neoarchean silico-carbonatites from the Elagiri complex (12°31′N: 78°35′E), Southern Granulite Terrane, Indian Shield, where they occur within leucosyenites as enclaves. Trace elements suggest that the silico-carbonatites and leucosyenite are related through melting–crystallization episodes. U–Pb zircon ages from the silico-carbonatites yield two statistical peaks at ~2539 ± 9 Ma (~emplacement age) and ~2490 ± 15 Ma (~younger overprinting age). High Th/U ratios of zircon are consistent with magmatic crystallization. We suggest that silico-carbonatite generation was favoured by proto-plate subduction during the Neoarchean in this terrane.

Keywords: Leucosyenite, magmatic crystallization, mantle melting, proto-plate subduction, relict silico-carbonatite.