

Hybridised nephelinites record three source components at the Nola Seamount, Cape Verde

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The Nola Seamount is a guyot located in the northwest of the Cape Verde archipelago, and comprises two amalgamated edifices rising up to ca. 30 m below sea level. It was sampled at several localities during the RV Meteor M80/3 research expedition. In this contribution we investigate the whole rock and mineral chemistry of the Nola Seamount in order to understand the origin of the magmas and the role of source heterogeneity in the underlying mantle. The samples collected from the Nola Seamount are (mela)nephelinitic ankaramites, with clinopyroxene, Fe-oxides and subordinate olivine. The samples show high MgO, Fe₂O₃, CaO, TiO₂ and P₂O₅ contents. Multielement patterns show relatively low Rb, Ba and Pb and elevated Sr concentrations compared to other lavas from Cape Verde. A positive correlation is observed between Sr and P₂O₅. Clinopyroxene crystals have diopside compositions with Mg# 60 to 80 mol%, cores tend to display Mg# 72 to 80 mol% and rims 66 to 74 mol%. Diopside REE profiles show LREE enrichment, with positive correlations observed between REE. The diopside population also displays enrichment in Sr concentrations and when paired with Ce/Pb and Sm/Nd, the lower values of Ce/Pb and Sm/Nd record a range of low to high Sr concentrations, a feature which is also found in the whole rock Sr and Ce/Pb variations. The Nola Seamount samples show evidence of clinopyroxene, iron-oxide and olivine accumulation. The observed variations in Sr concentration with Ce/Pb ratios indicate mixing between three distinct components: a high Ce/Pb, enriched mantle component; and two low Ce/Pb endmembers, one of which is characterised by high Sr and P₂O₅ attributable to apatite while the other reflects a depleted mantle source.