Occurrence of Komatiitic basalt in Schirmacher Oasis, Queen Maud Land, East Antarctica

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Occurrence of a Late Proterozoic/Phanerozoic komatiitic basalt dyke, in the Precambrian polymetamorphosed gneissic terrain of Schirmacher Oasis, Queen Maud Land, East Antarctica is reported for the first time. The dyke composed of olivine (Fo_{87-90}) which is largely prestine, clinopyroxene, magnesiochromite and glass, shows clinopyroxene micro-spinifex texture. It has high MgO (14.10-15.10 wt.%), low K_2O (0.46-0.68 wt.%), TiO_2 (0.93-1.00 wt.%) contents and high CaO/Al_2O_3 (1.11-1.22) ratios. It shows Al-depleted signature (low Al_2O_3/TiO_2 =8.36-8.72, depleted HREE Gd_N/Yb_N = 1.66-1.96) suggesting that the source magma of this komatiitic basalt dyke was generated by low degree of partial melting of a mantle plume with garnet in the residue. The LREE enrichment (La_N/Yb_N =3.01-3.51), Nb anomalies, Th/Yb and Ta/Yb ratios in this dyke further suggest that it has been produced from a parental komatiitic source magma by fractional crystallisation and assimilation of the crustal rocks, while ascending through the continental crust.