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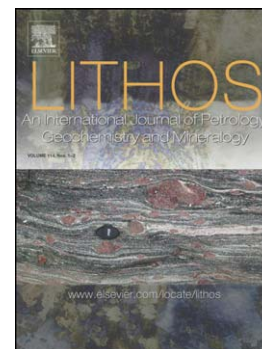
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Platinum group elements in mantle melts and mantle samples

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Abstract

A large data compilation has been assembled of platinum group element (PGE) analyses in mantle melts and mantle rocks, the latter including an assortment of xenoliths and obducted mantle massifs. The degree of correlation has been investigated among the PGEs and with other major element variables such as Al_2O_3 , TiO_2 and Mg number, and the results are considered in the context of the current paradigm for the behaviour of highly siderophile elements in the silicate Earth.

Primitive mantle melts have a wide range of PGE contents. Komatiites have the highest abundances of all the PGEs, show the strongest correlations between Pt and Rh, Pt and Pd and between the iridium-group PGEs Ir, Ru and Os (IPGEs). Most basalts of all affinities have lower levels of Pt and Pd and much lower levels of Ir, Ru and Os than komatiites. Within the basalt grouping Rh has stronger affinities with the IPGEs. Picrites and Archaean basalts are intermediate between these two groups. MORBs and a small proportion of continental LIP basalts show strong depletions in all PGEs attributable to retention of sulfide in their mantle source rocks, or sulfide liquid fractionation on ascent. The degree of PGE depletion in other basalts is probably attributable to equilibration with sulfide, but is less than

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