

Mobility of Re and Os isotopes in platinum-group minerals during laterization?

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The Re-Os isotope systematics of Platinum-Group Minerals (PGMs) from mantle-derived rocks are considered the most robust records of long-term interaction between different regions of the Earth's interior. Hence, the Os-isotope composition of PGMs found in placers and soils derived from ultramafic massifs have been traditionally regarded as resistant to supergenic processes, and have been used to track the geochemical evolution of the Earth's interior. In this work we present preliminary data that show meaningful differences in the Os-isotope composition in different populations of PGMs (i.e. primary PGM related to magmatic processes and secondary PGM formed due to weathering processes) recovered from different horizons of a lateritic profile from the Dominican Republic. We suggest that these differences reflect the opening of the Re-Os system in individual PGM during lateritic weathering. These results are twofold as it will help to: (1) elucidate the small-scale mobility of noble metals in the supergene setting and therefore the possible formation of PGM at these very low temperature, (2) better refine the Os-isotopic datasets of PGMs that are currently being used for defining dynamic models of core-mantle separation, crustal generation, and fundamental plate-tectonic processes such as the opening of ocean.