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Chromitite as a possible tracer of mantle dynamics

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Podiform chromitites are frequently found from the Moho transition zone to upper mantle section of ophiolites, and interpreted as a kind of cumulates formed by melt/harzburgite interaction and related magma mixing within the shallowest part of the upper mantle. They have been traditionally classified into two types, concordant and discordant ones: the former and the latter are concordant and discordant, respectively, to foliation of surrounding harzburgite. The two types of chromitites are completely different in petrography and chemistry as Ahmed and Arai (2002) described. I would like to propose that some of the concordant chromitites have experienced ultra-high pressure (UPH) conditions and are possibly of deep recycling origin. The diamond-bearing chromitite from the Luobosa ophiolite, Tibet, is a typical example. Our preliminary data on the two types of podiform chromitites from the Oman ophiolite are consistent with this interpretation.

Keywords: chromitite, origin, ultrahigh-pressure minerals, mantle dynamics