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ORE DEPOSITS AND THE ROLE OF THE LITHOSPHERIC MANTLE
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Ore deposits and the role of the lithospheric mantle

Edited by Sisir K. Mondal, William L. Griffin and Wolfgang Maier

Editorial Board

Ore deposits and the role of the lithospheric mantle

Platinum-group element systematics and petrogenetic processing of the continental upper mantle: A review

Highlights

► Petrogenetic processing may generate a wide range of PGE systematics inside the continental lithosphere. ► PGE budgets inherited from melting events are highly sensitive to magma fluxes ► Major magmatic inputs may rejuvenate the PGE systematic of depleted mantle. ► Sizeable domains of the continental lithosphere are significantly enriched in Pd, Au, Cu, and Se.

Sulfide-rich dunite within a thick Moho transition zone of the northern Oman ophiolite: Implications for the origin of Cyprus-type sulfide deposits

Highlights

► Sulfide-rich dunites were found from a thick MTZ of Oman ophiolite. ► Sulfides are pyrrhotite and pentlandite, and olivines are low in NiO. ► Sulfides are similar in S isotopic ratio to one of Cyprus-type ore deposits upsection. ► S supplied with water from the slab promoted partial melting of the then mantle wedge.

Hafnium-neodymium constraints on source heterogeneity of the economic ultramafic-mafic Noril'sk-1 intrusion (Russia)

Original Research Article

Pages 36-46

K.N. Malitch, E.A. Belousova, W.L. Griffin, I.Yu. Badanina

Highlights

► New isotopic constraints on mineralised and barren rocks of the Noril'sk deposit. ► Distinct Hf- and Nd-isotope compositions identified for different rock units. ► Interaction of several magma sources during formation of the Noril'sk-1 intrusion. ► Isotopic signatures imply a mixture of juvenile material, SCLM and old crust.

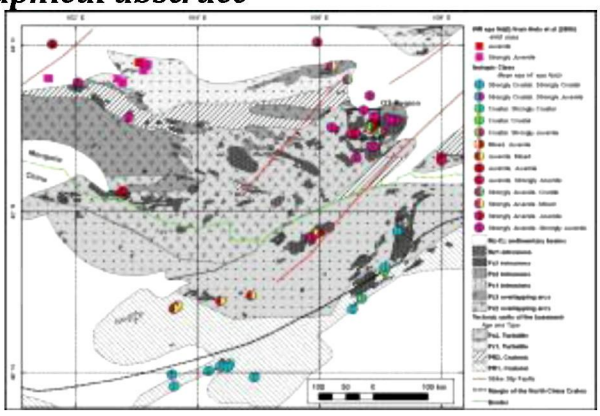
Sr–Nd–Pb–Hf isotope systematics of the Hugo Dummett Cu–Au porphyry deposit (Oyu Tolgoi, Mongolia)

Original Research Article

Pages 47-64

A. Dolgopolova, R. Seltmann, R. Armstrong, E. Belousova, R.J. Pankhurst, I. Kavalieris

Graphical abstract



Highlights

► Sr–Nd–Pb–Hf isotopes indicate the dominance of a mantle component. ► Model ages show involvement of pre-Neoproterozoic crust during petrogenesis. ► Magmas originated from juvenile material within a subduction-related setting. ► Juvenile sources are pivotal for generation of fertile (porphyry-Cu) magmas.

Evidence for mixing of Re–Os isotopes at < 2.7 Ga and support of a remobilized placer model in Witwatersrand sulfides and native Au

Original Research Article

Pages 65-73

Ryan Mathur, Christoph Gauert, Joaquin Ruiz, Paul Linton

Highlights

► Re–Os isotope measurements from pyrite and native gold from Witwatersrand ► Ages for mineralization range from syn to post deposition of basin sediments. ► Re–Os mixing diagrams used to argue for modified placer model

Transfer of Os isotopic signatures from peridotite to chromitite in the subcontinental mantle: Insights from in situ analysis of platinum-group and base-metal minerals (Ojén peridotite massif, southern Spain)

Original Research Article

Pages 74-85

José M. González-Jiménez, Claudio Marchesi, William L. Griffin, Rosario Gutiérrez-Narbona, Jean-P. Lorand, Suzanne Y. O'Reilly, Carlos J. Garrido, Fernando Gervilla, Norman J. Pearson, Karoly Hidas

Highlights

► Chromitites are hosted in subcontinental lithospheric mantle. ► Chromitites are precipitated from very residual small-volume melts. ► Peridotite-hosted BMS and chromitite-hosted PGM have similar $^{187}Os/^{188}Os$. ► $^{187}Os/^{188}Os$ variability is not erased by partial melting or percolation reactions.

Significance of chromian spinels from the mantle sequence of the Andaman Ophiolite, India: Paleogeodynamic implications

Original Research Article

Pages 86-96

Biswajit Ghosh, Tomoaki Morishita, Koyel Bhatta

Highlights

► Chemistry of accessory Cr-spinels of mantle restites displays directional variation ► Mantle restites towards south are increasingly akin to more depleted peridotites ► The same sliver of oceanic mantle underwent different styles of melting ► A fore-arc–back-arc setting during Cretaceous is inferred