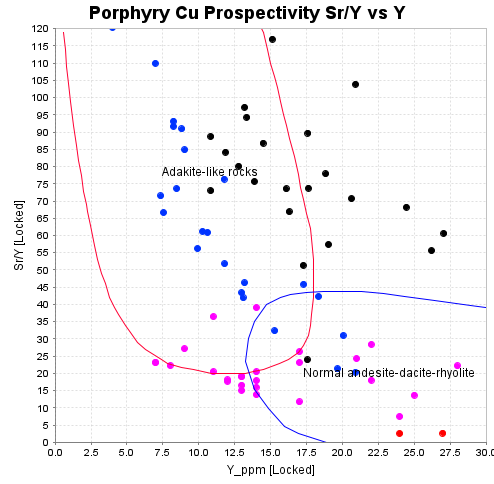


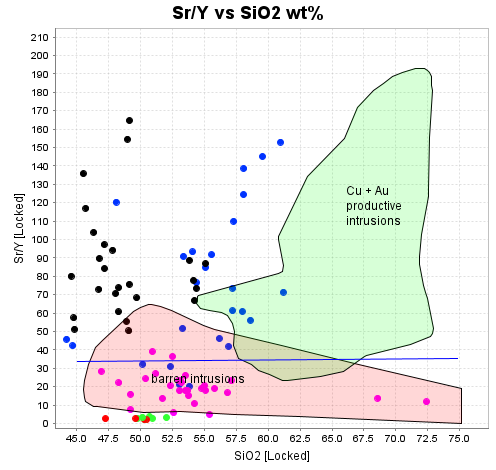
V/Sc vs Sc

• V/Sc versus Sc classification diagram

• Decreasing V/Sc with decreasing Sc signifies fractional crystallisation of magnetite.

⇒ Halley, S. (2020) Mapping magmatic and hydrothermal processes from routine exploration geochemical analyses. Economic Geology v. 115(3)





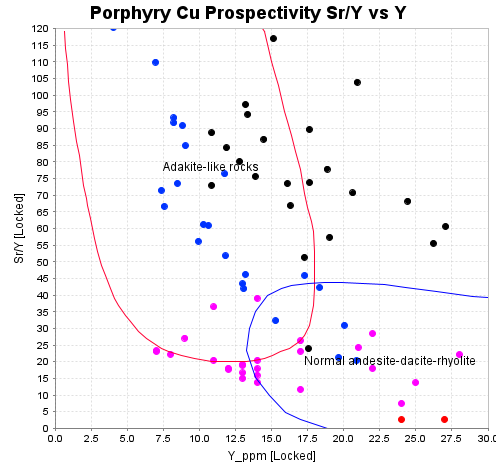
Sr/Y vs SiO2 wt%

• Ratio Sr/Y usually effective in discriminating Cu ore-forming magmas from ordinary andesites, dacites and rhyolites in

• apparently unmineralized arc segments around the pacific margin. For prospectivity assessments of igneous complexes, sites

• having Sr/Y>35 at SiO2>57 wt% can be regarded as Cu-fertile.

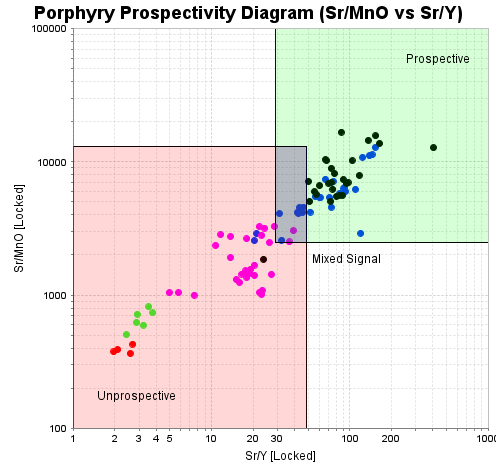
⇒ Loucks, R.R., 2014, Distinctive composition of copper ore-forming arc magmas: Australian Journal of Earth Sciences, v. 61, pp. 5-16.



Porphyry Cu Prospectivity Sr/Y vs Y

• Plot of Sr/Y against Y. The fields for typical composition of Adakite-like rocks and normal andesite-dacite-rhyolite rocks are from Richards and Kerrich (2007)

⇒ Richards et al., 2012, High Sr/Y Magmas Reflect Arc Maturity, High Magmatic Water Content, and Porphyry Cu +/- Mo +/- Au Potential: Examples from the Tethyan Arcs of Central and Eastern Iran and Western Pakistan, Economic Geology, v.107, pp. 310, Fig 9c



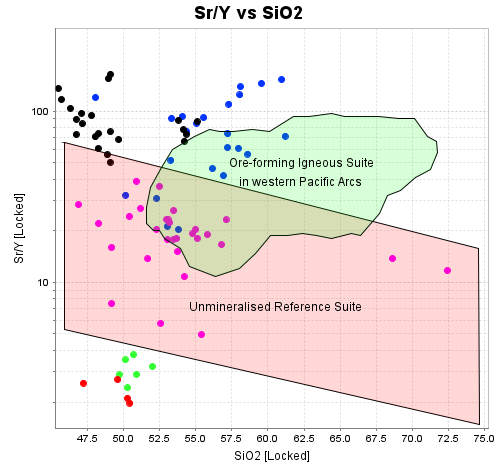
Porphyry Prospectivity Diagram (Sr/MnO vs Sr/Y)

• (Automatic Unit conversion will occur)

• Prospectivity diagram for porphyry Cu, skarn or epithermal mineralisation constructed using Sr/MnO and Sr/Y ratios.

• Three prospectivity fields for prospective, unprospective and mixed signals (overlap between prospective and unprospective fields).

⇒ Ahmed et al., 2019 Assessing copper fertility of intrusive rocks using field portable X-ray fluorescence (pXRF) data. Geochemistry: Exploration, Environment, Analysis. Vol. 20, pp. 81-97.



Sr/Y vs SiO2

• Two fields represent i) rock suites associated with Cu-Au ore deposits and ii) a barren reference rock suite defined by samples from NW Pacific volcanic arcs, including intraoceanic and continental margin arcs (Kurile Arc, N. Honshu Arc, Central Ryukyu and Izu-Bonin Arc).

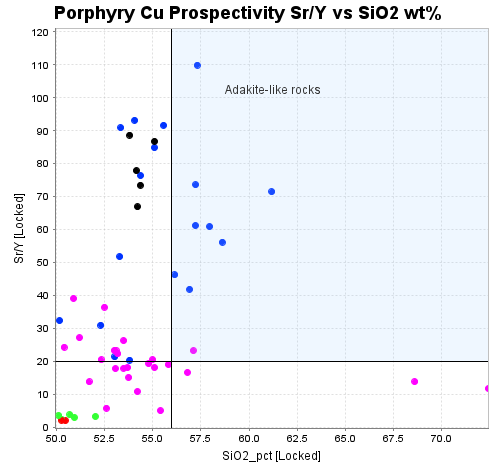
• All analyses are from fresh or weakly altered (weakly propylitic at most) whole-rock samples.

⇒ Diagram from Cohen et al. (2010) after Rohrlach, B.D. and Loucks, R.R. (2005).

⇒ Cohen et al., 2010. Major advances in exploration geochemistry, 1998-2007. Geochemistry: Exploration, Environment, Analysis, vol. 10, pp. 3-16

⇒ Rohrlach, B.D. and Loucks, R.R. 2005. Multi-million-year cyclic ramp-up of volatiles in a lower crustal magma reservoir trapped below the Tampakan copper-gold deposit by Mio-Pliocene crustal compression in the southern Philippines.

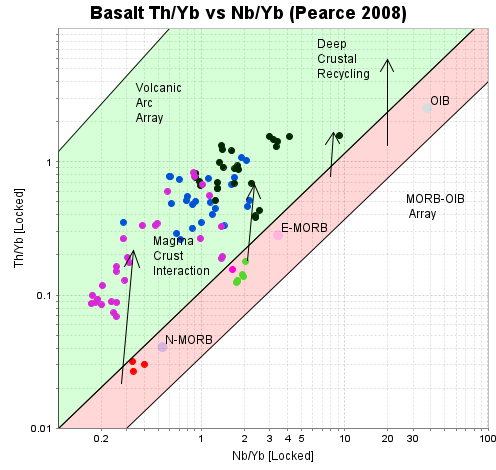
⇒ In: PORTER, T.M. (ed.) Super porphyry copper and gold deposits. A global perspective. PGC Publishing, Perth, vol. 2, 270p.



Porphyry Cu Prospectivity Sr/Y vs SiO2 wt%

• Plot of Sr/Y against SiO2. The fields for typical composition of Adakite-like rocks are from Richards and Kerrich (2007)

⇒ Richards et al., 2012, High Sr/Y Magmas Reflect Arc Maturity, High Magmatic Water Content, and Porphyry Cu +/- Mo +/- Au Potential: Examples from the Tethyan Arcs of Central and Eastern Iran and Western Pakistan, Economic Geology, v.107, pp. 310, Fig 9e



Basalt Th/Yb vs Nb/Yb (Pearce 2008)

• Fig 2a. Basalt classification diagram with Th-Nb as proxy for crustal input, divided into oceanic basalts and volcanic arc basalts field.

• Acronyms: MORB - Mid-Oceanic Ridge Basalt, OIB - Ocean-Island Basalt, N-MORB - Normal-MORB, E-MORB - Plume-MORB. N-MORB is depleted in trace elements compared to E-MORB.

⇒ Pearce, J.A. 2008. Geochemical fingerprinting of oceanic basalts with applications to ophiolite classification and the search for Archean oceanic crust, Lithos. vol. 100, pp. 14-48