Supplementary Fig. 1† The instrument and method limits of detection (ILOD and MLOD) for $^{103}$Rh and $^{105}$Pd determined using the equations of Longerich et al. (1996)$^{62}$ and Pettke et al. (2012)$^{64}$ as a function of the total measured counts for Agilent 7700x LA-ICP-MS analysis of chalcopyrite and bornite.
Supplementary Fig. 2-1† Method and instrument limits of detection (MLOD and ILOD) for $^{103}$Rh determined using the equations of Longerich et al. (1996) and Pettke et al. (2012) for Agilent 7700x LA-ICP-MS analysis of chalcopyrite CRG-1902 (34.52% Cu).
Supplementary Fig. 2-2† Method and instrument limits of detection (MLOD and ILOD) for $^{105}$Pd determined using the equations of Longerich et al. (1996)$^{62}$ (normal distribution) and Pettke et al. (2012)$^{64}$ (Poisson distribution) for Agilent 7700x LA-ICP-MS analysis of chalcopyrite CRG-1902 (34.52% Cu).
Supplementary Fig. 3-1† Method and instrument limits of detection (MLOD and ILOD) for $^{103}$Rh determined using the equations of Longerich et al. (1996) and Pettke et al. (2012) for Agilent 7700x LA-ICP-MS analysis of bornite OSP9 (62.19% Cu).
Supplementary Fig. 3-2† Method and instrument limits of detection (MLOD and ILOD) for $^{105}\text{Pd}$ determined using the equations of Longerich et al. (1996)⁶² (normal distribution) and Pettke et al. (2012)⁶⁴ (Poisson distribution) for Agilent 7700x LA-ICP-MS analysis of bornite OSP9 (62.19% Cu).
Supplementary Fig. 4-1† Observed uncertainty versus Poisson uncertainty for gas blank signals for 8900x LA-ICP-MS/MS PGE analysis of Cu-rich mineral bornite OSP9 (AU21A17 experiment).

\[ y = 1.0001 \times \text{RSD} \]

\[ R^2 = 0.996 \ (n = 14) \]
Supplementary Fig. 4-2† Poisson and observed measurement uncertainties versus total counts for the gas blank signals in 8900x LA-ICP-MS/MS PGE analysis of Cu-rich mineral bornite (AU21A17 experiment).
Supplementary Fig. 5†  Observed uncertainty versus Poisson uncertainty of gas blank corrected sample signal in 8900x LA-ICP-MS/MS PGE analysis of Cu-rich mineral bornite OSP9 (AU21A17 experiment).

Observed Uncertainty ($RSD, \%$)

Poisson Uncertainty ($RSD_p, \%$)
Supplementary Fig. 6-1† $^{63}\text{Cu}^{40}\text{Ar}^+$ and $^{65}\text{Cu}^{40}\text{Ar}^+$ interference removal and sensitivity change of $^{103}\text{Rh}^+$ and $^{105}\text{Pd}^+$, as well as other PGE, with change of He collision gas flow rate using 7700x LA-ICP-MS.
Supplementary Fig. 6-2† $^{63}\text{Cu}^{40}\text{Ar}^+$ contribution on $^{103}\text{Rh}^+$ in 7700x LA-ICP-MS analysis of Cu-rich materials with He collision gas flow rates of 0 to 9 mL min$^{-1}$. 

Spot Size = 110 µm

$n = 4$
Supplementary Fig. 7-1† Time resolved signals for analysis of bornite CMNMC 42116 (analysis JN09F07) containing 27 ng g$^{-1}$ to 100 µg Pb by 7700x LA-ICP-MS.
Supplementary Fig. 7-2† Time resolved signals for analysis of bornite CMNMC 42116 (analysis AU22D15) containing 6 to 158 µg g⁻¹ Pb by 8900x LA-ICP-MS/MS.
Supplementary Fig. 8-1† Method and instrument limits of detection (MLOD and ILOD) for $^{103}$Rh and $^{105}$Pd for Agilent 7700x LA-ICP-MS analysis of chalcopyrite CRG-1902 (34.52% Cu).
Supplementary Fig. 8-2† Method and instrument limits of detection (MLOD and ILOD) for $^{103}$Rh and $^{105}$Pd for Agilent 7700x LA-ICP-MS analysis of bornite OSP9 (62.19%).
Supplementary Fig. 9† Signals (counts s⁻¹) of $^{63}\text{Cu}^{40}\text{Ar}^+$ vs. $^{63}\text{Cu}^+$ in 7700x LA-ICP-MS analyses of chalcopyrite CRG-1902 (34.52% Cu) at He collision gas flow rate of 0 to 8 mL min⁻¹.
Supplementary Fig. 10† Rh content determination with and without using the Sylvester (2001)\textsuperscript{53} and linear CuAr interference correction procedures for 7700x LA-ICP-MS PGE analysis of bornite OSP9 (62.19% Cu).
Supplementary Fig. 10-2† Pd content determination with and without the Sylvester (2001)\textsuperscript{53} and linear CuAr interference correction procedures for 7700x LA-ICP-MS PGE analysis of cubanite OSP6 (24.17% Cu).