**Figure S1.** LA-ICP-MS count outputs for a composite of (**a**) $py_s$-$py_{I-1}$ from sample CA20 and (**b**) $py_{II-1}$-$py_{II-2}$ from sample CA38. Insets show the analyzed pyrites and paths of the laser analysis (arrows indicate the direction of ablation). Note that the pys is lower Au, As and Pb contents, compared to the surrounding $py_{I-1}$, which is enriched in Au and As compared to $py_{II-1}$ and $py_{II-2}$. The pattern of analyzed $py_{II-1}$ and $py_{II-2}$ indicates micro-inclusions of galena and free gold.
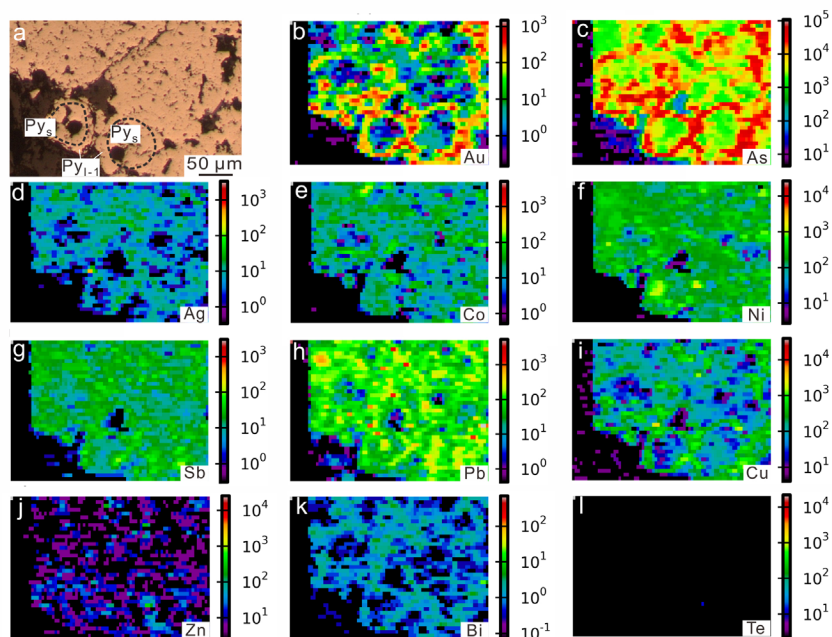
**FIGURE S2.** LA-ICP-MS images of trace elements (ppm) in pyrite from sample CA20. Core of the pyrite (pys) contains Au, As, Ag, Co, Ni, Pb, Sb and Cu. Rim of the pyrite (py$_{I-1}$) is more enriched in these elements. See text for more explanation of pyrite generations and their compositions.
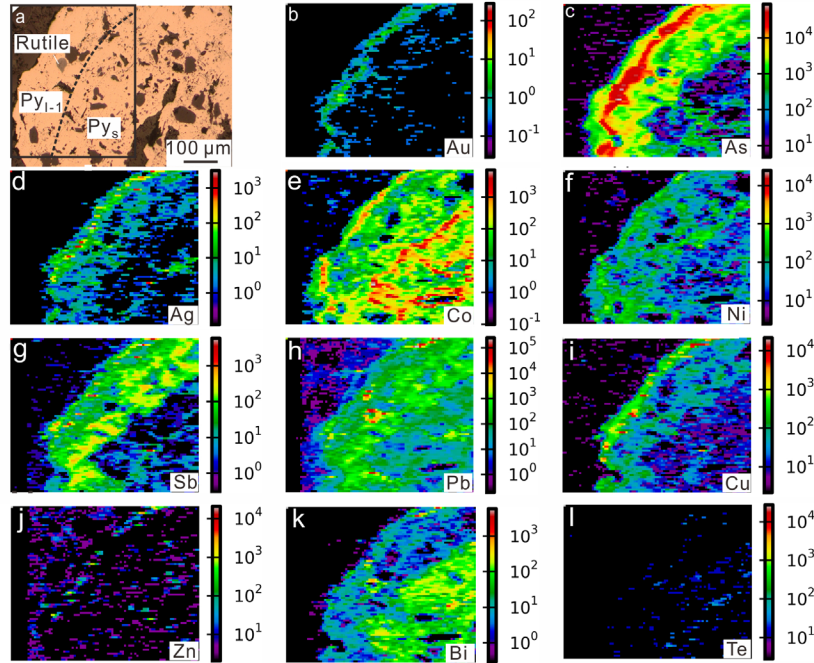
**FIGURE S3.** LA-ICP-MS images of trace elements (ppm) in pyrite from sample CA25. Pyrite core (pys) has higher Co, Ni and Pb concentrations than the rimming pyrite (py$_{I-1}$), which has higher Au, As, Ag, Co, Ni, Pb, Sb and Cu contents. See text for more explanation of pyrite generations and their compositions.
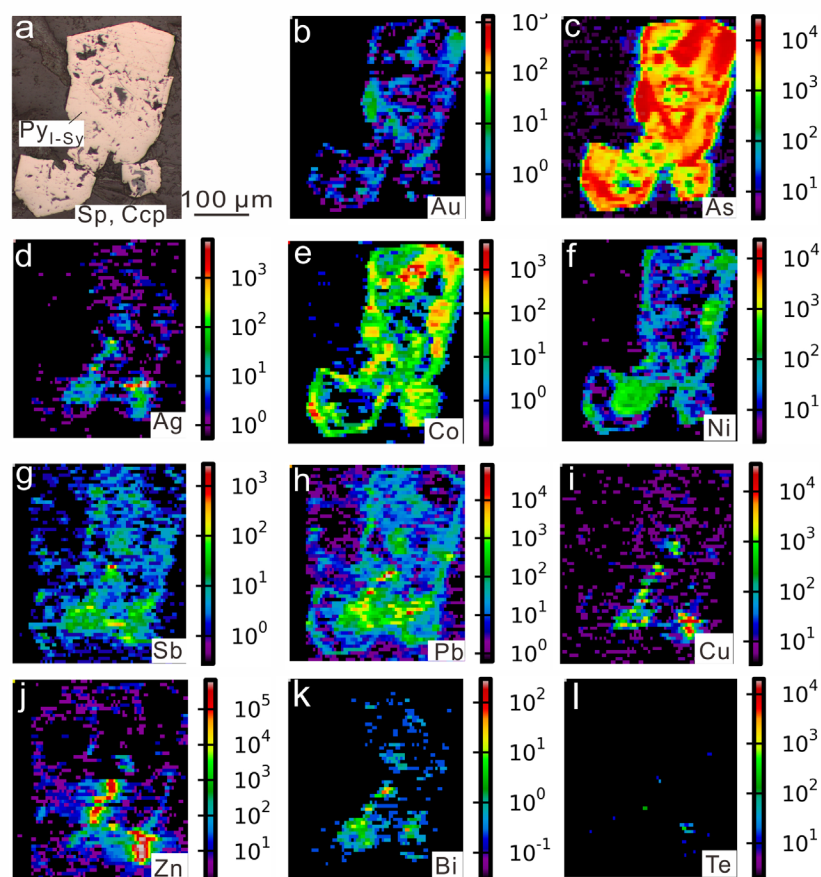
**FIGURE S4.** LA-ICP-MS images of trace elements (ppm) in pyrite (py$_{I-Sy}$) from sample CA29. Py$_{I-Sy}$ has high As, Ni and Co contents with inclusions of chalcopyrite, galena and sphalerite.