



71. **Gold** in magnetite aggregate (dark grey) and chalcopyrite (grey), polished section. Mednorudnyanskoe deposit. Specimen: V.A. and V.I. Popovs #1244, collected by N.I. Kozin. BSE photo: I.A. Blinov.

aggregates. Copper is frequently found among chalcopyrite relicts in limonite, where malachite clusters have overgrown copper and cuprite aggregates (Fig. 69).

Gold. We have found gold within the magnetite-sulfide aggregates (Fig. 71) as a result of electron microprobe analysis of polished sections (analyst I.A. Blinov). Between 12.1 and 17.2% silver was identified within various micron-sized gold particles. Gold has crystallized along with magnetite and sulfides and as such is a primary mineral of supergene ores.

Graphite has been encountered within a coarse-crystalline aggregate of white calcite with a grey band, which included dark grey hexagonal graphite plates up to 0.2 mm.

Sulfur. As judged by the supergene karst mineral assemblages, native sulfur is assumed to be a common mineral within areas of sulfide destruction. However, it seems that no large segregations of sulfur ever occurred here, while smaller grains failed to attract the eye of researchers. Native sulfur was mentioned from the Mount Vysokaya deposit by I.Ya. Krivoshchyokov, a geographer and local historian, in 1910. We have found light yellow tiny sulfur crystals in two specimens, within the small cavities of oxidized sulfide-magnetite ores.

Sulfides, Arsenosulfides, and Tellurides

Chalcopyrite, pyrite and pyrrhotite are the most abundant of the sulfur compounds and their analogs at the Mednorudnyanskoe deposit. Chalcocite, covellite, sphalerite and marcasite are less common, with bornite, djurleite, cobaltite, galena and hesite being very rare.

Chalcopyrite is the major mineral of the primary copper and copper-iron ores. It occurs as aggregates with pyrite, sphalerite, magnetite, chlorite, epidote, calcite,



72. **Copper** with **chalcopyrite** on limonite. 9 x 5 cm. Mednorudnyanskoe deposit Fersman Mineralogical Museum RAS #47011, 1949. Photo: M.B. Leybov.