

## **GOLDEN PYRITES FROM THE IBERIAN PYRITE BELT**

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Pyrite, with variable As contents, from massive sulfides of the Iberian Pyrite Belt (IPB) has been regarded to contain gold in solid solution, although it has not proven yet. In this study we carried out the first ever characterization of precious metals content of pyrite, by means of SEM-EDS, EPMA y LA-ICP-MS, from various mineralization styles from the IPB, including polymetallic, Cu-rich, Sb-As-rich and pyritic ores. Our results confirm, that pyrite from all styles of mineralization carry valuable amounts of gold (up to 4 ppm), although the contents are strongly variable depending on of both textures and style of mineralization. Pyrite from polymetallic and Sb-As-rich ores has the higher gold content, whereas that from the stockworks and pyritic mineralizations has significantly lower concentrations. Regarding the textural control, primary pyrite bear higher Au contents (up to 4 ppm) than recrystallized pyrite (up to 2 ppm). A careful inspection of the time-resolved spectra collected during LA-ICP-MS reveal that gold contents in pyrite are mainly related with discrete nano-to-micron-sized nanoparticles. These observations are fully consistent with the fact that Au particles were also observed at the edges of recrystallized pyrites. We suggest the possible releasing of Au from pyrite structure during recrystallization processes associated to the hydrothermal evolution (progressive heating) of the mineralizations at the IPB. This hydrothermal evolution has also resulted in the formation of visible Au found associated with: (1)pyrite, chalcopyrite, cobaltite, native Bi, Bi-sulfosalts and Te-sulfides in both cupriferous ores and stockworks; (2)electrum, Ag-rich tetrahedrite and chalcopyrite in Sb-As mineralizations; (3)sphalerite and galena in polymetallic ores; and (4) pyrite in pyrite mineralizations.

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