

IGNEOUS ROCKS AND GREISSEN-TYPE TIN MINERALIZATION SHOWN BY THE CRYSTAL CHEMISTRY

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Magmatic differentiation filtered and adjusted to data from the crystal chemistry of composite plutonic rocks from Plasenzuela, Extremadura, Spain has enabled economically important concentrations of greissen tin to be discovered. Three magmatic events have been identified. Potassium – argon radiometric dating gives ages of 390, 335 and 250 Myr within a geological scenario going back to 1590 Myr. These three minor magma intrusions come from a primary toleithic magma in the Hercinic orogeny with the contribution of anatexis and very slight metasomatism. Analyses of the complete rock for tin, zinc, tungsten, copper, lead, chromium, nickel, titanium, silver, molybdenum and iron corroborated that this composite plutonic rock is a metalotectic tin producer (cassiterite) and to a lesser degree, of tungsten too. The purity of the mineral fractions from the plutonic rocks from Plasenzuela was verified by means of scanning electron microscope and x-ray dispersion spectrography to eliminate the risk of error in the handling of the crystal chemistry data. X - ray diffraction analyses were done on the silicates which form the different types of rock and these served to adjust the petrological units as determined by petrography. This methodology is starting to be applied in the south of Peru given that philonite tin has already been found in quantities which have brought the country to the forefront of tin producers.