

The evolution of the Iberian Pyrite belt: new insights from geochronology, geochemistry, and structure

SEAN FREEBORNE¹, JAMES BRAID¹, AND LORI PASLAWSKI¹

*Department of Earth Sciences, St. Francis Xavier University, Antigonish, Nova Scotia B2G 2W5, Canada
<x2015jjv@stfx.ca>*

The geology of southern Iberia is dominated by rocks that record the amalgamation of Pangea, which was formed during the late Paleozoic by the collision of Laurussia and Gondwana. The Middle to Late Devonian Phyllite Quartzite Group, which are the oldest exposed rocks in Southern Iberia, underlie the volcanic and sedimentary rocks of the Iberian pyrite belt and are thought to be continental shelf deposits deformed during Pangean orogenesis. Despite being host to some of the world's largest ore deposits, the relationship of the formation of the Iberian pyrite belt to the evolution of the Variscan orogen remains enigmatic. Therefore, in order to better understand the formation of the Phyllite Quartzite Group and its relationship to the Pyrite belt, two field sections were studied in detail. The first section is in the core of the Iberian Pyrite belt, and is considered to represent a classic example of Phyllite Quartzite deposition. The second is poorly studied and crops out in the northern section of an unmineralized part of the Iberian Pyrite belt. Field work and structural analyses suggest that the metasedimentary unit of the northern section: (i) is lithologically distinct, (ii) had a different structural history from the classic Phyllite Quartzite Group, and (iii) may have a genetic link to units not exposed in the Iberian Pyrite belt. U–Pb laser ablation detrital zircon geochronology of the northern block supports these field observations. Geochronology and isotopic data from magmatic rocks suggest the Pyrite belt had a protracted evolution that was both pre- and syn-collisional to the main Variscan orogenic event.