

SULFUR AND LEAD ISOTOPE CHARACTERISTICS OF THE PONTES E LACERDA GOLD DEPOSITS, SW AMAZONIAN CRATON BRAZIL

M.C. Geraldés¹, C.C.G. Tassinari¹, M. Babinski¹ and S. Iyer²

¹ Instituto de Geociências, Universidade de São Paulo, Brasil

² Stable Isotope Laboratory, University of Calgary, Calgary, Canada

This work deals with the characterization of the S and Pb isotope signatures in sulfides from the Pontes e Lacerda gold deposits (PLGD) located in the SW sector of the Amazonian craton. Among 23 hydrothermal gold deposits are known in the Pontes e Lacerda region related to mylonitization and hydrothermal alteration (K/Ar ages ca. 970 Ma). The ores consist of quartz, pyrite, chalcopyrite, galena, sphalerite and gold.

The sulfur isotope results show $\delta^{34}\text{S}$ values in the range from +1.0‰ to +5.5‰ in galenas from mineralized quartz-vein. Pyrites collected in host rocks show $\delta^{34}\text{S}$ values in the range from +6.9‰ to +10.0‰ and suggest an influence from the sedimentary rocks. Pb isotopic results in galenas plotted on plumbotectonic diagrams fall within the 1000-800 Ma age interval, broadly consistent with the K/Ar ages and may represent the age of the mineralizing solution precipitation. Pb isotope ratios indicate a much more radiogenic signature for the pyrites (from the host rocks) than that for galenas (from the Au-bearing qtz-vein) and probably are a result of the U-bearing minerals in the pyrite grains or the presence of U in the pyrite lattice.

The PLGD isotopic data suggest a heterogeneous source and reflect a complex history where ore solutions interacted with the host rocks. The PLGD must have formed in the course of the Aguapeí-Sunsás event in the SW part of the Amazonian Craton and the studies reported here state for an important metallogenic epoch in the Pontes e Lacerda region in the Mesoproterozoic time.