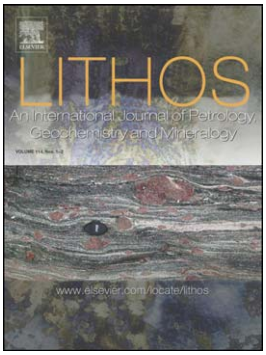

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Microstructural observation and chemical dating on monazite from the Shilu Group, Hainan Province of South China: implications for origin and evolution of the Shilu Fe-Co-Cu ore district

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Abstract

New monazite chemical U-Th-total-Pb (CHIME) ages, combined with microstructural observations, mineral compositions, and whole-rock geochemistry, indicate that the large-scale, banded iron formation (BIF)-type Shilu Fe-Co-Cu ore district in Hainan Province, South China is a multistage product of sedimentation, metamorphism, and hydrothermal-metasomatic alteration associated with multiple orogenies. Two types of monazite, i.e. “polygenetic” and “metamorphic”, were identified. The “polygenetic monazite” comprises a magmatic and/or metamorphic core surrounded by a metamorphic rim, and shows complex zoning. Breakdown corona structure, with a core of monazite surrounded by a