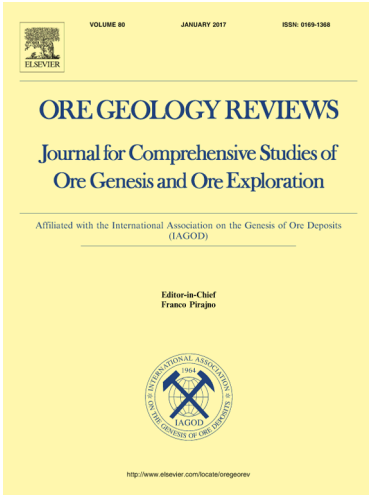

Evidence of local sourcing of sulfur and gold in an Archaean sediment-hosted gold deposit

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PII: S0169-1368(17)30148-8
DOI: http://dx.doi.org/10.1016/j.oregeorev.2017.07.021
Reference: OREGEO 2291

To appear in: *Ore Geology Reviews*

Received Date: 20 February 2017
Revised Date: 21 July 2017
Accepted Date: 26 July 2017

Please cite this article as: V. Selvaraja, Marco.L. Fiorentini, H. Jeon, D.D. Savard, C.K. LaFlamme, P. Guagliardo, S. Caruso, T-H. Bui, Evidence of local sourcing of sulfur and gold in an Archaean sediment-hosted gold deposit, *Ore Geology Reviews* (2017), doi: http://dx.doi.org/10.1016/j.oregeorev.2017.07.021

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Title

Evidence of local sourcing of sulfur and gold in an Archaean sediment-hosted gold deposit

Abstract

Determining the source of sulfur in an ore deposit is key to understanding the nature of the ore forming processes. The Neoarchaean Paulsens sediment-hosted gold deposit (~1 Moz @ 7.6 g/t) located in the Pilbara Craton of Western Australia exhibits many of the characteristics of Phanerozoic shale hosted gold deposits (e.g. Huijiabao Trend, Northern Carlin Trend and Sukhoi Log), in that 1) black shales are the dominant host rock, 2) gold is hosted in pyrite as both free gold and dissolved gold in the lattice of the pyrite, and 3) multiple generations of pyrite have formed due to a variety of geological processes. In this contribution we utilised Secondary Ion Mass Spectrometer (SIMS) to measure the in-situ quadrupole (^{32}S, ^{33}S, ^{34}S and