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PREFACE

Selected ore deposits of Brazil

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This series of papers on a variety of ore deposits in Brazil is the outgrowth of the "First Brazilian Symposium on Metallogeny" held in Gramado, Rio Grande do Sul, in May 2005. The selection of papers mirrors quite well the range of commodities and fascinating diversity of ore deposit types Brazil has to offer.

The thematic issue starts with a paper by Monteiro et al. who use detailed petrography to establish a consistent paragenetic sequence of alteration and mineralization throughout the Sossego iron–oxide–copper–gold (IOCG) deposits in the giant Carajás Mineral Province. Combined with stable isotope data, it allows the authors to constrain the spatial and temporal zoning of hydrothermal alteration and mineralization. They conclude that the Pista-Sequerinho-Baiano and Sossego-Curral ore bodies formed at a deep and high structural level of an IOCG system, respectively. Significantly, the copper–gold mineralization was late in the alteration history and broadly synchronous in both ore bodies.

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Another contribution to the ore deposit geology of the Carajás Mineral Province is by Dreher et al. who use new geologic, fluid inclusion and stable isotope data to establish that the Igarapé Bahia Cu–Au deposit displays both characteristic syngenetic VHMS and epigenetic IOCG style geological features. This controversial paper provides evidence via recent B isotope data on tourmaline that there is the distinct possibility of an involvement of a marine evaporitic source in the hydrothermal system of Igarapé Bahia. The authors carefully evaluate evidence for both genetic models and correctly agree that more detailed work needs to be conducted to resolve this fascinating genetic conundrum.

Souza Neto et al. provide an overview of W–Au skarns in the Serido mobile belt in the Borborema Province in northeast Brazil. Special emphasis is put on the reduced Bonfim Au–Bi–Te skarn deposit. The majority of skarns in the Serido mobile belt are oxidized tungsten skarns even though the Itajubatiba and Bonfim gold-bearing skarns display reduced features, such as pyrrhotite as predominant sulfide, garnet with high almandine plus spessartite component, and elevated gold content. PIXE data revealed that significant amounts of F (up to 9,490 ppm) are present in prograde titanite, and retrograde clinozoisite–zoisite and gold-related epidote, suggesting significant F activity in the skarn forming hydrothermal fluids.

Beurlen et al. in a second paper on mineralization in the Borborema Province use Nb–Ta–(Ti–Sn)–oxide mineral chemistry as tracer of rare-element granitic pegmatite fractionation in the pegmatite-rich Borborema Province. The Borborema Pegmatite Province, with over 750 registered mineralized rare-element granitic pegmatites, is a historically important tantalum province and is currently well known for top-quality gems, such as the Paraiba Elbaite. Detailed electron microprobe analyses of pegmatite

minerals are used to classify the pegmatites, trace the degree of fractionation, and provide prospecting tools for identifying the Ta-, Li-, and/or Cs-rich ores.

The last paper in this thematic issue deals with the mineralogy and geochemistry of iron ore from the Águas Claras, Capão Xavier, and Tamanduá iron deposits. They are situated in the world-famous Quadrilátero Ferrifero (Iron Quadrangel) in Minas Gerais, central Brazil. The paper by Spier et al. describes these three iron ore bodies in terms of structural control, ore mineralogy, and geochemistry. The comparison of the three deposits shows that the original composition of the itabiritic protore plays a major role in the genesis of high- and low-grade soft ores. The authors suggest that it is not possible to form huge soft high-grade supergene deposits from siliceous itabirite alone and that another ingredient required in the formation of these giant ore deposits is an impermeable barrier that could act as a trapping device for meteoric fluids.

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