

ANAIS



VI SIMPÓSIO BRASILEIRO DE
METALOGENIA
17 A 20/8/2025 - SALVADOR - BA

**A Metalogenia para o
Desenvolvimento do Setor Mineral
Brasileiro.**



UFBA
Universidade
Federal da Bahia



ADIMB
Agência para o Desenvolvimento e
Inovação do Setor Mineral Brasileiro



ANAIS DO VI SIMPÓSIO BRASILEIRO DE METALOGENIA: A Metalogenia para o Desenvolvimento do Setor Mineral Brasileiro

Salvador, 17 a 20 de agosto de 2025

Organizadores:

Comissão Organizadora do VI Simpósio Brasileiro de Metalogenia

ADIMB – Agência para o desenvolvimento Tecnológico

Salvador, Bahia, Brasil

2025



Ficha Catalográfica

Dados Internacionais de Catalogação na Publicação (CIP) (Câmara Brasileira do Livro, SP, Brasil)

Simpósio Brasileiro de Metalogenia
(6. : 2025 : Salvador, BA)
Anais do VI Simpósio Brasileiro de Metalogenia
[livro eletrônico] : a metalogenia para o
desenvolvimento do setor mineral brasileiro /
organização Poliana Iara de Freitas Toledo, Simone
Cerqueira Pereira Cruz. -- Salvador, BA : ADIMB,
2025.

PDF

Vários autores.
ISBN 978-65-988953-0-3

1. Geologia - Brasil 2. Minerais - Brasil
I. Toledo, Poliana Iara de Freitas. II. Cruz, Simone
Cerqueira Pereira. III. Título.

25-304917.0

CDD-549

Índices para catálogo sistemático:

1. Rochas e minerais : Mineralogia 549

Eliane de Freitas Leite - Bibliotecária - CRB 8/8415



RAMAN CHARACTERIZATION OF FLUID INCLUSIONS FROM THE JATOBÁ AND FURNAS IOCG DEPOSITS, CARAJÁS MINERAL PROVINCE, BRAZIL

Almeida, R.C.¹ Pestilho, A.L.S.¹ Monteiro, L.V.S.¹, Veloso, A.S.R.²

¹ Instituto de Geociências da Universidade de São Paulo, São Paulo, SP, Brasil, rodrigo cordeiro@usp.br

² Instituto de Geografia, Geociências e Saúde Coletiva da Universidade Federal de Uberlândia, Uberlândia, MG, Brasil

This study presents the first Raman spectroscopy data from fluid inclusions associated with late hydrothermal alteration-mineralization in the Jatobá and Furnas IOCG deposits of the Carajás Mineral Province. The Jatobá deposit is located in the Southern Copper Belt and is hosted by amygdaloidal basalts and minor rhyodacite and diabase of the Neoproterozoic Itacaiúnas Supergroup. The Furnas deposit follows a 9-km WNW-ESE trend along the Northern Copper Belt. It is hosted by the Furnas Granite and the Itacaiúnas Supergroup rocks composed of andalusite-muscovite-biotite at the footwall and amphibole-garnet-biotite at the hanging wall. The deposits exhibit contrasting hydrothermal alteration and ore styles, although extensive magnetite-amphibole-apatite alteration zones envelop the main mineralization in both deposits. The Jatobá and Furnas deposits also share a late chlorite alteration. At Jatobá, the early nickel-rich mineralization coeval to magnetite-amphibole-apatite was followed by chalcopyrite-quartz veins cross cutting chlorite alteration zones. Furnas displays copper-gold mineralization represented by chalcopyrite in replacement fronts within magnetite-amphibole-rich rocks and bornite in late quartz-albite veins and stockworks. Fluid inclusions from late quartz veins were characterized using optical petrography and confocal micro-Raman spectroscopy. At Jatobá, chalcopyrite-quartz veins contain aqueous triphasic ($S_{\text{halite-L}_{\text{aq}}-V}$) (Type 2A) and multiphasic ($S_{\text{solids-L}_{\text{aq}}-V}$) (Type 2B) inclusions with 5–40% solids, while quartz-biotite veins host aqueous biphasic ($L_{\text{aq}}-V$) (Type 1) inclusions (5–10% vapor) alongside Type 2A and 2B. Furnas shows Type 1, 2A, 2B and aquo-carbonic inclusions (20–40% vapor) (Type 3A), plus inclusions resembling Type 2 but with 5–10% solids (Type 3B). Raman spectroscopy identified calcite (ν_1 - 1088 cm^{-1} ; ν_4 - 713 cm^{-1} and lattice modes = 154 cm^{-1} and 282 cm^{-1}), ilmenite ($\nu_{\text{Ti-O}}$ (A_g) - 640-730 cm^{-1}), and α -quartz (465 cm^{-1} - symmetric Si-O stretching; 206 cm^{-1} - Si-O-Si bending, and 128 cm^{-1} - lattice mode), as solid phases in Type 2 multiphase inclusions from Jatobá. These preliminary results demonstrate the complexity of fluids during late hydrothermal activity, with the presence of possible accidentally trapped minerals that suggest the possibility of Si-Fe-Ti-bearing carbonic fluids in the late evolution of the Jatobá deposit, and carbonic-bearing brines associated with the evolution of the Furnas deposit. These results provide new insights into metal remobilization processes in the Carajás Province.

Acknowledgements: We acknowledge Vale S.A. for their financial support to this research, CAPES (Brazilian Federal Agency for Support and Evaluation of Graduate Education) for the Master's fellowship and also the technical support and valuable contributions from colleagues at the GeoFluid Laboratory and the Institute of Geosciences at the University of São Paulo.