

# SEG 2023 Conference: Resourcing the Green Transition

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## **Geochronology of the Tocota Pluton and Au-Cu-Ag Mineralization of the San Francisco de Los Andes Quartz-Tourmaline Breccia, SW San Juan, Argentina**

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The San Francisco de Los Andes (SFLA) magmatic-hydrothermal breccia, composed of tourmaline quartz, is located in San Juan Province, east of the Cordillera Frontal. SFLA hosts Bi-Cu-Au breccia deposits, with mineral assemblages of Bi-Cu-Au-As-Fe-Zn-Pb-Ag. The mineralized Tocota pluton intrudes the carboniferous sedimentary Agua Negra Formation. The Pluton belongs to the Las Piedritas Granodiorite unit that integrates the Colangüil Batolite. The activity of late, boron-rich volatiles from the pluton causes hydraulic fracturing, forming veins and breccias filled by tourmaline and associated mineralizations. We aim to define the crystallization age of the Tocota pluton (TJBG-D1A and TJBG-D1B samples) and the mineralization age (TJBG-BRX sample) by U-Pb zircon and Re-Os on molybdenite, respectively. In this way, it will be possible to contribute to the understanding of the evolution of hydrothermal alteration of the San Francisco Breccia. Zircon separation from the intrusive rock was carried out at the Institute of Geosciences of the State University of Campinas (IG-UNICAMP). Two porphyritic facies were individualized according to the predominant alteration: chlorite ± sericite (TJBG-D1A) and k-feldspar (TJBG-D1B). Cathodoluminescence, BSE, and SE images were obtained from the scanning electron microscope (SEM), and 30 spots from each sample were defined for U-Pb method dating by LA-ICP-MS from the Laboratory of Isotopic Geology of IG-UNICAMP. The tourmaline quartz breccia sample (TJBG-BRX) was sent to the Applied Isotope Research for Industry and Environment Program at Colorado State University for Re-Os dating. The zircon grains are prismatic euhedral shape and display continuous or discontinuous growth zoning textures, typical of a magmatic source. Together with the petrographic description and the obtained zircon and molybdenite ages, this is expected to contribute to the understanding of the mineral-magmatic system evolution of this portion of the Andes.