

GEOCHEMISTRY OF A JADEITITE-SERPENTINITE CONTACT, GUATEMALA  
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Jadeitite is found in some serpentinite bodies in a few subduction complexes. It crystallizes from Na-, Al-, and Si-rich fluids, and shows geochemical evidence of multiple subduction-zone fluid sources. Interactions between jadeitite-forming fluids and serpentinite host rocks are largely unknown, because serpentinite-to-jadeitite contacts are rarely preserved.

In the Sierra de las Minas, Guatemala, a 3-m-wide pit exposes a contact between a mined-out jadeitite body and host serpentinite. An apparent transition zone between albitite (the presumed outermost part of the jadeitite body, now seen only in a spoil pile) and nearby serpentinite outcrops contains four texturally distinct rock types of differing outcrop color. Seven samples from this zone, along with jadeitite from the spoil pile, outcrop serpentinite ~1 m outside the pit, and two albite veins and a jadeitite nodule within the contact zone were analyzed by XRF and LA-ICP-MS for major, minor and trace elements. FeO was determined by titration.

Al<sub>2</sub>O<sub>3</sub>, MgO, FeO, Ni, Cr and Co abundances follow the field-defined “contact,” changing markedly between sheared albitite and foliated meta-ultramafic rocks from values of Guatemalan jadeitites to those of serpentinite. In contrast, SiO<sub>2</sub>, Fe<sub>2</sub>O<sub>3</sub>, CaO, Zr, Hf, and Sc apparently show diffusion/dispersion effects. U, Sr, Pb, Cs and Ce in albitite ~15 cm from the contact with meta-ultramafic rock are greatly enriched in abundances relative to other samples. LREE-enriched patterns of both jadeitite and albitite resemble SIMS analyses of jadeite from elsewhere. A conspicuous negative Eu-anomaly in the Guatemalan rocks likely reflects a seawater component. The contact therefore testifies to complex, subduction-related interactions among serpentinite, jadeitite and seawater.

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