American Mineralogist, Volume 92, pages 1232–1237, 2007

Magmatic paragonite in trondhjemites from the Sierra del Convento mélange, Cuba*

Antonio García-Casco†

Departamento de Mineralogía y Petrología, Universidad de Granada, Avda. Fuentenueva sn, 18002 Granada, Spain

Abstract

In the Sierra del Convento mélange peraluminous trondhjemitic-tonalitic rocks, formed by partial melting of subducted oceanic crust at ca. 15 kbar, 700 °C, contain millimeter-sized crystals of paragonite that appear to be of magmatic origin. These crystals are replaced by plagioclase and quartz along the rims. Chemically relict paragonite cores have high K contents (up to 0.35 apfu), whereas K is low at the rims (down to ca. 0.10 apfu). Calcium is relatively high in the cores and rims (0.06–0.11 apfu). The relict core compositions contrast significantly with small matrix paragonite crystals, which formed during subsequent subsolidus retrogression of relictic magmatic plagioclase at high pressure/low temperature (ca. 400 °C, 8 kbar). Textural relations, mineral composition, and calculations of phase relationships in the system NCASH strongly suggest that primary paragonite formed by crystallization of a silicate melt. This appears to be the first reported occurrence of magmatic paragonite.

Keywords: Magmatic paragonite, trondhjemite, mélange, subduction