

Epidote–chlorite alteration of a Mesoproterozoic miarolitic granite from the Burro Mountains, New Mexico

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In the northeastern part of the Burro Mountains in southeastern New Mexico, a 1.14–1.32 Ga granite complex comprising hornblende granite, biotite granite, miarolitic granite and rapakivi-type granite with mantled alkali feldspar megacrysts intrude 1.55 Ga metamorphic crust. The miarolitic granite contains abundant coeval anorthositic or leucogabbroic inclusions up to several tens of meters in length.

The miarolitic biotite granite is a fine- to medium-grained marginally peraluminous rock (mean A/CNK 1.06) with A-type geochemical character. The mean of eight analyses is: SiO₂ 76.7, TiO₂ 0.12, Al₂O₃ 12.44, Fe₂O₃ 0.16, FeO 0.82, MnO 0.02, MgO 0.13, CaO 0.47, Na₂O 3.25, K₂O 5.18, P₂O₅ 0.04, F 0.07 wt. %; Ba 310, Rb 326, Sr 44, Nb 28, Ga 22 ppm. Locally the granite is strongly epidotized. Fracture-controlled alteration has produced greenish grey epidote–quartz–chlorite replacement veins up to two meters in width, and alteration around miarolitic cavities has produced epidote–quartz–chlorite aggregates or balls up to 20 cm in diameter. This postmagmatic alteration resembles in mode of occurrence and appearance greisenization or tourmalinization of granite in some other localities, but the chemical character is different.