

LETTER

Native aluminum: Does it exist?

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ABSTRACT

Several papers reporting exotic native elements have been published within the last few decades. The “native” occurrences described are rather dubious in view of the lack of solid proof of their relationships with the host-rock minerals. Consequently, the genetic models proposed ranging from bio-reduction to the influence of deep-mantle, strongly reduced fluids, are somewhat speculative. Here we present data for a unique Al⁰ flake protruding from the phlogopite matrix of a rock specimen collected from a desilicated pegmatite vein. The geologic setting suggests two processes that might have played a key role in the Al⁰ formation: (1) desilication of pegmatite, resulting in its Al residual enrichment; and (2) serpentinization of an ultramafic body, providing a strongly reduced front (H₂ and hydrocarbons) toward the serpentinite/pegmatite contact. These processes have presumably led to the reduction of Al to Al⁰ at discrete sites of alumina-rich minerals.

Keywords: Native Al, serpentinization, desilication, reduction, pegmatite