

LETTER

On the formation of arrays of micro-tunnels in pyrope and almandine garnets

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ABSTRACT

A recent paper devoted to unusual fine-scale tubular tunnels found in pyrope and almandine garnets suggested that the 5 to 100 μm diameter tunnels were produced by an endolithic organism that is able to chemically dissolve and penetrate the mineral, perhaps in search of nutrients. The hypothesized microbial boring of the garnets was based on the finding of endolithic remains in the tunnels, but boring alone does not adequately explain the linear, highly aligned or occasionally branched tunnels that have been imaged. We have prepared this short Letter, in the spirit of Occam's Razor, to highlight the very probable role that dislocations play in the creation of such tunnels by preferential etching of a dislocation-rich deformation microstructure. The geometrical features of the tunnels possess all the characteristics of classical dislocation substructures that have been observed in natural and synthetic garnets.

Keywords: Garnets, dislocations, etching, tunnels