

## **Dislocation microstructures in majorite garnet experimentally deformed in the multi-anvil apparatus**

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### **ABSTRACT**

Majorite garnets with the composition  $Mj_{70}Py_{30}$  have been deformed in the multi-anvil apparatus at 17 GPa and 2000 °C. The microstructure has been characterized by transmission electron microscopy. It is shown that under these conditions majorite garnet is ductile. Dislocations with  $\langle 100 \rangle$  and  $\frac{1}{2}\langle 111 \rangle$  Burgers vectors are observed with a density  $1-5 \times 10^{12} \text{ m}^{-2}$ . The absence of clear glide planes and the occurrence of subgrain boundaries suggest the importance of diffusion and climb in the plasticity of majorite garnets in mantle transition zone conditions.

**Keywords:** Majorite, garnet, dislocations, multi-anvil apparatus, transmission electron microscopy