

Variation of antiphase domain size in omphacite: A tool to determine the temperature–time history of eclogites revisited

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ABSTRACT

A systematic transmission electron microscopy (TEM) study was performed on the size distribution of antiphase domains in omphacite from eclogites from the Adula/Cima Lunga nappe. The measured mean antiphase domain size is shown to depend on peak temperature, duration of peak metamorphism, cooling rate, and composition. The systematics of the size distribution are modified by dislocation interaction, recrystallization, and the time of growth during the temperature-time-deformation history of the rock. Based on a new model for the size distribution of antiphase domains, we are able to show the potential and limits to estimating time and peak temperature of metamorphism and the subsequent cooling history of this important rock type.