

Petrological significance of prograde homogenization of growth zoning in garnet: an example from the Llano Uplift

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ABSTRACT In the Llano Uplift of central Texas (USA), prograde homogenization of garnet growth zoning took place during moderate- to high-pressure dynamothermal metamorphism over a narrow temperature range near the transition from the amphibolite to the granulite facies. This subtle record of early dynamothermal metamorphism survived subsequent static metamorphism at low pressures in the middle-amphibolite facies, despite the destruction of most high-pressure mineral assemblages that originated in the early metamorphic episode. Geographically systematic variations in the degree of homogenization indicate that the uplift as a whole underwent high-pressure metamorphism, in accord with emerging tectonic models for the mid-Proterozoic evolution of the southern margin of the North American continent.

Key words: garnet zoning; intracrystalline diffusion; Llano Uplift.