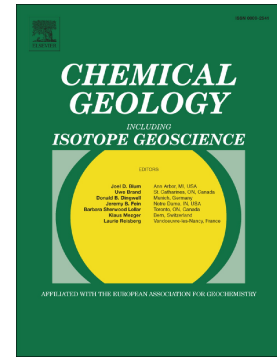


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Evaluation of the effective bulk composition (EBC) during growth of garnet

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110 8th Street, Troy, NY 12180**Abstract**

The effective bulk composition (EBC) for the initial growth of garnet that has nucleated only after considerable overstepping of the equilibrium garnet-in reaction has been calculated for eight samples from central Vermont. The method developed assumes that the composition of garnet is determined by the maximum driving force (maximum change in Gibbs free energy) at the assumed conditions of nucleation. The method of intersecting isopleths is used to find the EBC where the isopleth intersection matches the P–T conditions of nucleation.

The calculated EBC for all samples (four epidote-free and four epidote-bearing) contains less MnO and FeO (or lower FeO/MgO) than the whole rock bulk composition. The CaO content of the EBC is lower than the whole rock bulk composition in all epidote-free samples and in two of the four epidote-bearing samples. It is proposed that the differences between the EBC and whole rock bulk composition are caused by the sluggish kinetics of dissolution of reactants rather than diffusive transport of nutrients to the garnet.

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