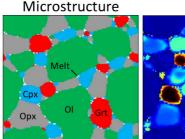
## Modeling microstructural disequilibria during generation of oceanic basalts

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We have developed a two-dimensional numerical model of multi-phase coarsening, diffusive trace element partitioning, and near-fractional melting. The model is applied to the generation of melts in MORB and OIB sources, and results are compared to (and constrained by) density functions from a MORB database and age-dependent La/Sm and Sm/Yb systematics in OIB's. Our principal conclusions are: (1) OIB sources are not enriched in trace elements compared to MORB, (3) OIB source melting is a non-equilibrium process, and (4) effective partition coefficients for Samarium in the mantle source assemblage may be significantly different from recent experimental values. The figure below shows a typical prediction of our models around the garnet transition depth. Microstructure La, ppm





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