Textures of Geo-materials
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NNIN Facility utilized: Characterization Facility

- Lattice orientation of naturally & experimentally deformed minerals
  - Crystallization mechanisms and conditions of garnet and spinel polycrystals
  - Deformation mechanisms of silicates and carbonates over range of pressure (0.5-2 GPa) - temperature (300-800°C) conditions
  - Mechanisms of recrystallization of high-P textures

- MAJOR OBSERVATIONS
  - High-symmetry polycrystals are common in nature owing to chemical & physical heterogeneities (precursor phases; deformation), influencing all later stages of crystallization
  - Columnar calcite is a relict high-pressure texture; initial stages of recrystallization destroy the shape fabric but not the crystallographic preferred orientation of grains

Photomicrograph annotated with data obtained by electron backscatter diffraction (EBSD) mapping. Misorientation boundaries are labeled with angle/axis of rotation required to bring the lattices into coincidence.

EBSD map of columnar calcite texture from a high-pressure marble

Publications


+ conference abstracts (GSA, AGU, EGU)