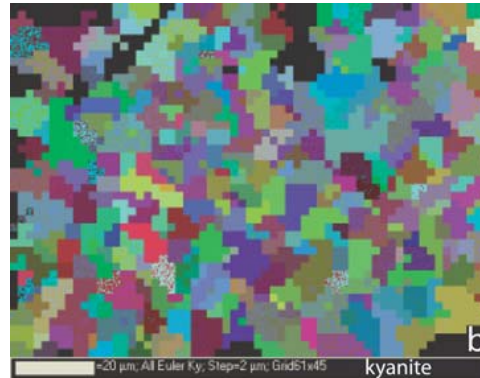


Metamorphic Microstructures

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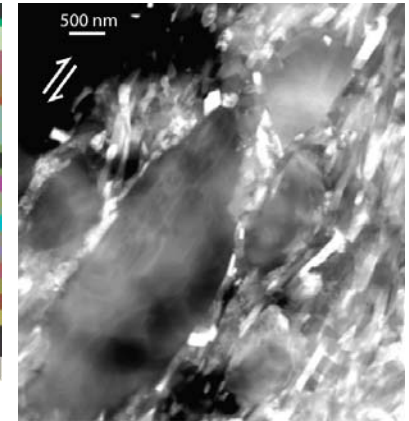
● Characterization of lattice orientations of minerals in naturally and experimentally deformed rocks using EBSD

- ◆ Crystallization mechanisms and conditions of garnet polycrystals and spinel-dominated symplectite in natural rocks
- ◆ Effect of deformation on polymorphic transformation (Al_2SiO_5 phases)
- ◆ Deformation mechanisms of silicates at high pressure geologic conditions (subduction zones)

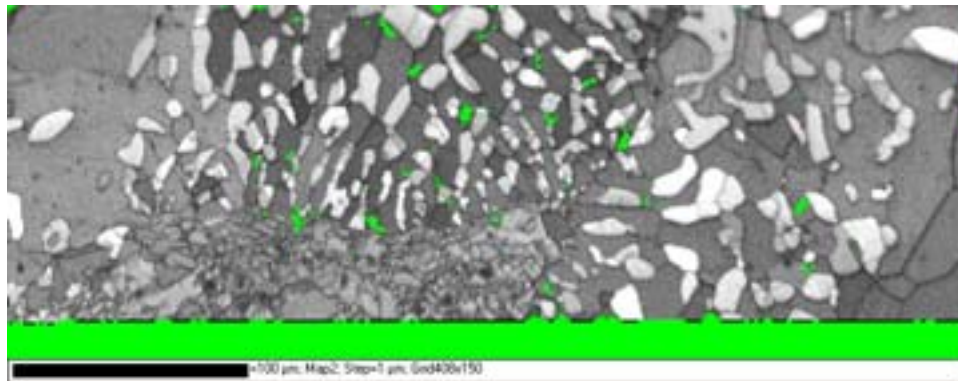


EBSD map of preferred orientation in experimentally deformed Al_2SiO_5 .

http://www.geo.umn.edu/orgs/whitney/Al2SiO5_deform.htm



TEM dark-field image of experimentally induced polymorphic transformation of Al_2SiO_5 . Large andalusite grains are relicts; fine sillimanite grains are neo-crystallized during deformation.



EBSD map of crystallographic orientation of phases in a complex reaction texture. In 2D, spinel (white phase in band contrast image, above) appears as disconnected crystals, but these are part of connected, branching arrays of dendritic crystals formed during rapid reaction related to rapid tectonic motion as hot rocks ascended from deep to shallow crustal levels.

2006-07 publications

- Whitney et al. (2007) *American Mineralogist*, 92, 281-288.
- Broz et al. (2006) *American Mineralogist*, 91, 135-142.
- Davis & Whitney (2006) *J. Metamorph. Geol.*, 24, 823-849.
- Whitney & Davis (2006) *Geology*, 34, 473-476.
- Whitney et al. (2006) *EOS Trans. AGU*, 87 (52).
- Whitney et al. (2006) *Geophys. Res. Abs.*, 8, 05006