

Report from Gordon Research Conference: Rock Deformation

Big Sky, Montana, USA
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“Plagioclase Deformation: Evidence from EBSD and Chemical Zoning”
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A post conference excursion to nearby Yellowstone Park

Plagioclase is a chemically complex mineral, the deformation of which is poorly understood at high temperatures in natural systems. This work uses crystallographic data, obtained using electron back-scatter diffraction (EBSD), and chemical zoning within grains to elucidate the processes which have shaped the microstructure of the Lewisian gneiss.

The EBSD revealed that the plagioclase has a crystallographic preferred orientation (CPO) interpreted to mean that it has deformed by dislocation creep. The CPOs obtained (the first for plagioclase in the Lewisian) are consistent with slip on the $[001](010)$ system which is not commonly recorded for plagioclase. Subsequent recrystallisation was followed by grain growth which produced reverse concentrically zoned grains with a granoblastic texture.

Attending this meeting gave me a chance to meet cutting edge researchers investigating experimentally, theoretically, and naturally deformed rocks. I had a lot of discussion and feedback about my work and was able to meet at least three other researchers who are working with plagioclase. This prompted a discussion about the CPO patterns we all had and how the microstructures could be interrogated further. It was asserted that the zoning patterns from my work could prove very useful in assessing post deformation annealing and grain growth in high temperature systems.

Not only was I able to meet established researchers, but there was also a large contingent of postgraduate and postdoctoral researchers in attendance. It is through conferences like this funded by bursaries such as this one that future collaborations will be established and progress made. For this reason and those outlined above, I would like to thank the Mineralogical Society for supporting me to attend this conference and hope that in the future many others will benefit from these awards as I have.