

## **Deformation, hydration, stress generation and mass transfer during non-equilibrium metamorphism: Examples from the Bergen Arcs, Norway.**

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During continental collision, granulite facies basement rocks undergo fluid-induced retrograde metamorphism. These granulites are dry, mechanically strong but in a metastable state (at temperatures below granulite facies and also stressed). Without the addition of externally-derived aqueous fluids re-equilibration is slow or non-existent. Fluid-induced reactions result in energy dissipation by retrograde metamorphic reactions, coupling between fluid migration, chemical reactions and deformation. Mechanical weakening and strain localization are characteristic features of such terranes. In this talk I will address a range of issues related to such phenomena, including density and volume changes associated with hydration and how this is accommodated in the deep crust, open system behaviour, fluid and mass transport mechanisms and deformation in the presence of fluid. The results are primarily based on fieldwork in the Bergen Arcs, Norway together with microstructural and analytical study of retrograded granulites.