



Grain-scale pressure variations: build-up and viscoelastic relaxation

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Grain-scale pressure variations may develop in polycrystalline materials with heterogeneous distributions of either bulk modulus or thermal expansion coefficient due to changing ambient pressure–temperature conditions during either burial or exhumation. However, viscous deformation naturally tends to flatten pressure gradients to establish pressure equilibrium. Such viscous relaxation is strongly dependent on the exponent in the power-law creep constitutive relation, and for large stress exponents there is the possibility of maintaining pressure variations for the order of a million years. In this work, we study the effect of viscoelasticity on the pressure build-up and relaxation for inclusion-host systems.