# Yield strength of rocksalt structures at high-pressure using Raman piezometry

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**Abstract**

Measuring yield strengths of condensed materials under non-hydrostatic compression provides essential constrains on their behavior under extreme mechanical efforts ranging from those encountered in planetary interiors to those in boundary lubrication. Raman frequencies of quartz are used to evaluate deviatoric stresses in rocksalt-structure media in diamond-anvil cell experiments to pressures up to 20 GPa. The piezospectroscopic effect in quartz is modeled by first-principles calculations. Non-hydrostatic stresses measured in halogen salts give yield strength estimates in the B1 (NaCl), and B2 structure (KCl and KBr). Raman measurements in MgO show that yield strength is consistent with former radial X-ray diffraction measurements. Radial pressure and deviatoric stress distribution in the DAC is mapped and used to discuss applicability of former determinations of yield strength.

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