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## **Single crystal elasticity of lawsonite**

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### **ABSTRACT**

The single-crystal elastic moduli of lawsonite  $[\text{CaAl}_2(\text{Si}_2\text{O}_7)(\text{OH})_2\cdot\text{H}_2\text{O}]$  were measured by Brillouin spectroscopy at ambient conditions. The Voigt-Reuss-Hill averaged aggregate elastic moduli are  $K_S = 125(2)$  GPa and  $\mu = 52(2)$  GPa, for the adiabatic bulk modulus and shear modulus, respectively. Our acoustic results resolve discrepancies between the bulk moduli obtained in earlier compression studies. Lawsonite has distinctive acoustic properties, being characterized by extremely high shear elastic anisotropy (74%), a high  $V_P$  to  $V_S$  ratio ( $V_P/V_S = 1.94$ ), and a large Poisson's ratio ( $\sigma = 0.318$ ).