

Abstract Submitted
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Second harmonic generation measurements for the determination of pressure induced phase transitions LKHAMSUREN BAYARJARGAL, BJOERN WINKLER, Goethe University — We show that optical second harmonic generation measurements can be used to efficiently delineate phase boundaries in high pressure experiments in diamond anvil cells and understand transition pathways. We have employed SHG measurements to study the pressure-induced structural phase transitions in AlN and ZnO as a function of temperature and of particle size. Furthermore, we demonstrate that pressure-induced magnetic phase transitions can be detected by this approach and show that the transition from an acentric to a centrosymmetric magnetic structure occurs in Cr₂O₃ at 10(1) GPa. The pressure dependence of the Neel temperature, $dT_N/dp = -1.0(2)$ K/GPa from our SHG measurements, which differs significantly from earlier results where dT_N/dp ranged from -16 K/GPa to +15 K/GPa. Further examples, where SHG measurements have provided information on pressure induced structural phase transitions are the cases of KIO₃, where two transitions at 7 and 14 GPa were identified, and of ice VII, where SHG measurements do not support a proposed acentric high pressure modification.

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