

Abstract Submitted
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Temperature Dependent Raman Studies on Liquid Phase Exfoliated MoS₂ MITCHELL CONNOLLY, ANDREW WINCHESTER, Southern Illinois University - Carbondale, PETER HALE, KESHAV M. DANI, Okinawa Institute of Science and Technology, SAIKAT TALAPATRA, Southern Illinois University - Carbondale, NANOPHYSICS LAB, DEPARTMENT OF PHYSICS, SOUTHERN ILLINOIS UNIVERSITY - CARBONDALE, USA TEAM, FEMTOSECOND SPECTROSCOPY UNIT, OKINAWA INSTITUTE OF SCIENCE AND TECHNOLOGY, JAPAN TEAM — We investigate on the temperature dependence of in-plane E_{12g} and out-of-plane A_{1g} Raman modes of few-layer MoS₂ prepared using the liquid-phase exfoliation method. Structural characterization performed after exfoliation using transmission electron microscopy (TEM) indicate the resultant material contains small, submicron size, few-layer flakes. Raman measurements indicating material thickness of 6 layers or fewer were observed at room temperature using a 532 nm laser line (E_{12g}=381.4 cm⁻¹ and A_{1g}=405.8 cm⁻¹). The Raman peak shifts indicate a linear dependence on temperature within the range 293 K to 77 K. The measured temperature coefficients of E_{12g} and A_{1g} modes will be presented and compared with other similar experimental/theoretical data available.

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