

Abstract Submitted
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On the variation of Differential Polarizability in polarized Raman Scattering measurements KARTHIK NAYANI, JUNG OK PARK, MOHAN SRINIVASARAO, Georgia Institute of Technology — Jones et al recently developed a framework to measure P_2 and P_4 using PRS.¹ The method requires the measurement of the angular dependence of the depolarization ratio. While the agreement of the results of P_2 and P_4 with theory is satisfactory there are some aspects to the methodology that need further scrutiny. The differential polarizability ratio (r) is used as a fitting parameter to the depolarization profile. The value of r so calculated from the method of Jones et al. has a sharp discontinuity at the phase transition from the nematic to the isotropic phase (T_{NI}) and also the variation of r in the nematic phase is not well understood. Further we show that when values of the r as obtained by data fitting are used in the expression of the original method of Jen et al, the values of P_2 and P_4 are in excellent agreement with theoretical predictions, rising the premise that a better understanding of the variation of r needs to be developed more accurate experiments using PRS.

¹W. J. Jones, et al., “On the determination of order parameters for homogeneous and twisted nematic liquid crystals from Raman spectroscopy” *Journal of Molecular Structure*, **708**, 145-163 (2004).

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