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**Measuring and Using the  $dn/dc$  of HPC Polymer and Microgel Solutions** KRISTA FREEMAN, KIRIL STRELETZKY, Cleveland State University — The specific refractive index increment ( $dn/dc$ ), the change in index of refraction with concentration, is essential for static light scattering (SLS) experiments on polymer solutions. With a reliable value for  $dn/dc$ , SLS yields basic polymer properties such as radius of gyration, molecular weight, and second virial coefficient. This study focuses on determining  $dn/dc$  values of hydroxypropylcellulose (HPC) polymer and microgel solutions and practically applying these values in SLS. Using a differential refractometer, HPC solutions were analyzed at a range of concentrations, molecular weights, wavelengths, temperatures, and filtration protocols. It was determined that  $dn/dc$  of HPC polymer is independent of temperature in good solvents, slightly dependent on molecular weight, inversely proportional to wavelength squared, and sensitive to polymer solution's filtration protocol. HPC microgel testing produced  $dn/dc$  values one order of magnitude larger than those of HPC polymer solutions and did not support the expected wavelength dependence. These findings were analyzed and used to obtain a molecular weight, radius of gyration, and second virial coefficient for HPC polymer and microgel solutions.

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