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Characterizing Dextran by GPC and Simultaneous Multi-angle and Quasi-elastic Light Scattering Detection

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Multi-angle light scattering (MALS) is one of the few absolute methods available for the determination of molecular mass (MM) and conformation of macromolecules. When one combines MALS with Gel Permeation Chromatography (GPC), one obtains number, weight and z-average MM values as well as MM distribution. For macromolecules with size larger than 10 nm, one also obtains size information, from which other molecular parameters such as molecular conformation and even branching can be extracted. By adding Quasi-elastic light scattering (QELS) to the GPC-MALS-RI detection line, one can then measure hydrodynamic size below 10 nm and thus determine conformation for a broader size range of macromolecules.

This paper presents data for the characterization of a polydisperse Dextran to illustrate how the combination of GPC and simultaneous detection by MALS and QELS allows determination of MM, size, MM and size distribution, conformation and branching information.