# CHARACTERIZATION OF HYALURONIC ACID BY STATIC, DYNAMIC AND ELECTROPHORETIC LIGHT SCATTERING

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## ABSTRACT

Hyaluronic acid (HA) is a natural heteropolysaccharide consisting of alternating residues of D-glucuronic acid and N-acetyl-D-glucosamin, that plays an important role as the structural and mechanical support for tissues, such as skin, tendons, muscles, and cartilage.

In this presentation, we will discuss how various light scattering techniques have been used in batch and flow mode to characterize HA molecules and their derivatives. In batch mode, Dynamic Light Scattering (DLS) and Electrophoretic Light Scattering (ELS) are used to fully characterize HA. The samples display interesting size / charge behavior at different concentrations.

In flow mode, a complete Triple Detection Size Exclusion Chromatography (SEC) system that incorporates a static light scattering (SLS) and intrinsic viscosity detector can be used to separate dissolved polymer molecules by size, determine their molecular weight and investigate any chain branching or conformational differences. Triple detection systems were fitted with either single angle SLS detectors, Right Angle (RALS) or Low Angle (LALS), or multi-angle detectors (MALS) – this talk will also highlight benefits and limitations of both types.

In addition, optical microrheology data based on DLS, which has particular attributes that are appropriate for characterizing relatively low viscosity systems, was collected for each of the HA samples and will be shown and discussed.

The various parameters that were obtained for the HA molecules using the different light scattering techniques were used to understand the properties of the final product.