Universal Patterns of Cluster Growth in Aqueous Sugars Observed by Dynamic Light Scattering\textsuperscript{1} TRI TRAN, DAVID SIDEBOTTOM, Creighton University — Dynamic light scattering was performed on aqueous sugar solutions to monitor the growth of sugar clusters as a function of sugar concentration and temperature. Three sugars (glucose, maltose and sucrose) were investigated. Analysis of the hydrodynamic radius of the diffusing clusters suggests a two-stage process of cluster growth. At low volume fractions of sugar, a cluster phase consisting of nearly monodisperse clusters forms with a mean cluster mass that increases in proportion to the volume fraction. A second stage of growth develops when clusters reach a size where they begin to overlap. In this later stage, cluster-cluster aggregation occurs and the cluster size grows in a common, but temperature dependent, power law fashion in advance of a percolation threshold near 83 wt% sugar.

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