

Abstract Submitted
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Coarse grained modeling of transport properties in monoclonal antibody solution JAMES SWAN, GANG WANG, Massachusetts Inst of Tech-MIT — Monoclonal antibodies and their derivatives represent the fastest growing segment of the bio pharmaceutical industry. For many applications such as novel cancer therapies, high concentration, sub-cutaneous injections of these protein solutions are desired. However, depending on the peptide sequence within the antibody, such high concentration formulations can be too viscous to inject via human derived force alone. Understanding how heterogenous charge distribution and hydrophobicity within the antibodies leads to high viscosities is crucial to their future application. In this talk, we explore a coarse grained computational model of therapeutically relevant monoclonal antibodies that accounts for electrostatic, dispersion and hydrodynamic interactions between suspended antibodies to predict assembly and transport properties in concentrated antibody solutions. We explain the high viscosities observed in many experimental studies of the same biologics.

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