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**Ion Specificity in Protein Aggregation Predicted from Diffusivity
Measurements in Stable Protein Solutions** JONATHAN RUBIN, ADRIANA
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The aggregation of therapeutic proteins in solution represents a major challenge in pharmaceutical development, as the mid- and long-term stability of these proteins is crucial for their efficacy and for compliance with FDA requirements. Monitoring slow aggregation experimentally is notoriously time-consuming, yet often unavoidable, since no theory with predictive power is currently available. In the present work, diffusion and aggregation kinetics of the globular model proteins lysozyme and BSA were studied in sodium-salt solutions of different composition and ionic strength using dynamic light scattering. We find a strong correlation between the concentration dependent protein diffusivity in stable solutions and the kinetics of protein aggregation in unstable solutions of similar composition but higher salt content. Our findings suggest a fast and convenient new way to assess a protein's specific tendency to aggregate in different types of electrolytes and buffer solutions.

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