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Influence of the Hofmeister Series on Lower Critical Solution Temperature (LCST) Polymers RYAN TOOMEY, LEENA PATRA, University of South Florida — Lower critical solution temperature (LCST) polymers can serve as model systems for probing the effect of ions on the stability of biological macromolecules. In this talk, we show how permutations in the chemical structure of poly(N-isopropylacrylamide), including n-propylacrylamide, cyclopropylacrylamide, and N-vinylisobutyramide influence the action of ions in the Hofmeister series. By using a combination of ellipsometry and FTIR, we show that ions salt out neutral polymers by enhancing the surface tension of the hydrophobic portions of the polymer. Weakly hydrated ions (known as chaotropes) can also lead to salting-in effects through interactions with amide dipoles. This salting-in effect is strongly modulated by the surrounding hydrophobic groups. The larger the hydrophobic group the weaker the salting-in effect, indicating that the specificity of the Hofmeister series results from a combination of ion-dipole interactions and hydrophobicity.

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