

Abstract Submitted
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The Role of Solvent-Solute Interactions on The Behavior of Low Molecular Mass Organo-Gelators KEVIN CAVICCHI, LI FENG, Department of Polymer Engineering, University of Akron — Low molecular mass organo-gelators (LMOGs) are a class of small molecules that can self-assemble in organic solvents to form three-dimensional fibrillar networks. This has a profound effect on the viscoelastic properties of the solution causing physical gelation. These gels have uses in a range of industries including cosmetics, foodstuffs, plastics, petroleum and pharmaceuticals. A fundamental question in this field is: What makes a good LMOG? This talk will discuss the relationships between the viscoelastic properties and thermodynamic phase behavior of LMOG/solvent solutions. The regular solution model was used to fit the liquidus line and sol/gel transition temperature vs. concentration in different solvents to determine LMOG-solvent interaction parameters ($\chi = A/T$). This parameter A was found to scale with the solubility parameter of the solvent, especially for non-polar solvents. This demonstrates that gelation is strongly linked to LMOG solubility and indicates that the bulk thermodynamic parameters of the LMOG (solubility parameter and melting temperature) are useful to predict the solution behavior of LMOGs.

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