

Abstract Submitted  
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**How Pure Components Control Polymer Blend Miscibility<sup>1</sup>**

RONALD WHITE, JANE LIPSON, Dartmouth College, JULIA HIGGINS, Imperial College, London — We present insight into some intriguing relationships revealed by our recent studies of polymer mixture miscibility. Applying our simple lattice-based equation of state, we discuss some of the patterns observed over a sample of experimental blends. We focus on the question of how much key information can one determine from a knowledge of just the pure components only, and further, on the role of separate enthalpic and entropic contributions to the miscibility behavior. One interesting correlation connects the value of the difference in pure component energetic parameters with that of the mixed segment interactions, suggesting new possibilities for predictive modeling. We also show how in some cases these two parameter groupings act as separate controls determining the entropy and enthalpy of mixing. Also discussed are the different patterns exhibited for UCST-type and LCST-type blends, these being revealed in some cases by simple examination of the underlying microscopic parameters.

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Ronald White  
Dartmouth College

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