

Abstract Submitted
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**Molecular Interpretation of Polymer-
Polymer Adhesion** SURIYAKALA RAMALINGAM, GUOLIN WU, SHAW L.
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Using the techniques developed in our laboratory, the miscibility behavior of vari-
ous copolymers has been determined experimentally. In addition, these experimental
studies were guided by molecular simulation studies. One example deals with blends
of poly (vinylidene fluoride-hexafluoropropylene)(PVDF-HFP) copolymers and poly
(butyl methacrylate) (PBMA). The interaction parameter (χ) of the binary systems
was determined by composition analysis of the co-existing phases by spectroscopic
techniques. Using χ , a generalized Flory-Huggins theory for free energy of mixing
has been used to predict the phase diagram of these binary blends. It was concluded
from the phase diagram that binary blends with P (VDF-HFP) copolymer content
more than 50% by weight are not compatible in solution. This can attributed to the
fact that PBMA segment migration into P (VDF-HFP) riche phase is not favorable.
Studies were also conducted with Raman microscopy. From further studies on the
physical properties of the polymers in the blend, the molecular interpretation of the
adhesion behavior of these polymers has been evaluated.

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