

## Energy Dissipation Mechanisms at Copolymer Toughened Polymer Interfaces

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### Abstract

The toughness of interfaces between glassy homopolymers can be enhanced by the presence of copolymers at the interface. If one of the homopolymers tends to fail by crazing then the interface toughness is strongly dependent on the applied mixity. At zero mixity the energy is mainly dissipated in a primary, crack tip craze whose size is controlled by number density of polymer chains that cross the interface and their strength. When the mixity is greater than a few degrees then extra energy is dissipated in the formation of subsidiary crazes that grow at an angle to the interface plane. We found that the form of the variation of toughness with mixity depends strongly on the amount of copolymer present. This result can be explained by consideration of the requirements to initiate the subsidiary crazes in front of the crack tip.