

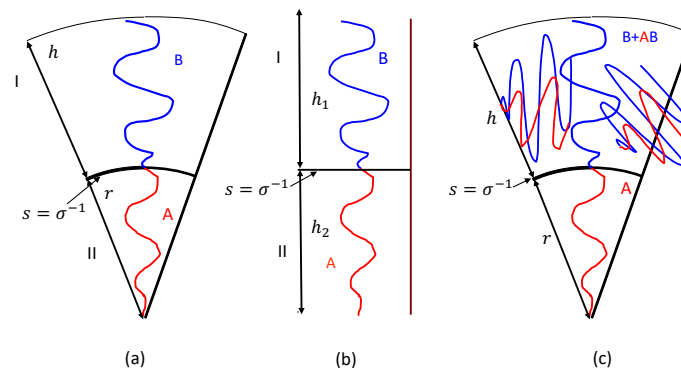
Anomalous phase behavior of ionic polymer blends and ionic copolymers

Pryamitsyn, V. A.; Kwon, H. K.; Zwanikken, J. W.; Olvera de la Cruz, M., Anomalous Phase Behavior of Ionic Polymer Blends and Ionic Copolymers.

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We have found that, in a contrast with the conventional polymer blends, the blends of ionic and non-ionic polymer can be partially miscible even at very high molecular weight and the phase diagram of the blends of ionic and non-ionic polymer may be a eutectic type one with two critical points and one three-phase coexistence point.

The phase inversion in the ionic copolymers is caused by the partial miscibility of the ionic and non-ionic components. Such partial miscibility causes a swelling of the minority component and a "switch" between minority and majority phases in ionic block copolymer melts



Modified strong stretching theory (charged system): Free energy per one AB chain

$$F = F_{el}^B + \frac{\gamma_{A|B}}{\sigma} + F_{el}^A$$

$\gamma_{A|B}$ - interfacial tension

σ - interfacial area per chain