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## **(G\*) Phase behaviour of Polydisperse Diblock Copolymers**

*Monday, June 19, 2023 4:30 PM (15 minutes)*

Recent experimental and theoretical studies have shown that many ordered structures, ranging in complexity from simple lamellae to complex Frank-Kasper (FK) phases, can be formed from diblock copolymers. In many of the experimental studies the polymeric samples used in are polydisperse, however most theoretical studies have examined monodisperse systems. Therefore, to conduct theoretical studies on the phase behaviour of polydisperse block copolymer systems is desirable. In our study, the molecular weight distribution of AB diblock copolymers is modelled as a four component blend. Self-consistent field theory is used to study the effects of the shape of the molecular weight distribution (MWD). It is found that the width and skewness of the MWD, and conformational asymmetry, all have significant effects on the formation of the FK phases. The theoretical results provide insight to regulating block copolymer phase behaviours via designed molecular weight distributions and shed light on the formation mechanisms of the FK phases.

### **Keyword-1**

Diblock copolymer

### **Keyword-2**

Phase behaviour

### **Keyword-3**

Polydisperse

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