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**Effect of flow on Janus rods organization in polymer blends**

SHAGHAYEGH KHANI, Case Western Reserve University, SAFA JAMALI, Massachusetts Institute of Technology, ARMAN BOROMAND, JOAO MAIA, Case Western Reserve University — In the past decade, Janus particles have attracted a lot of attention due to their amphiphilic nature. Directed assembly of these particles in polymer matrices can provide a tool for fabricating new functional materials. For example, the strong affinity of Janus particles to interfaces, could allow the control of the interface of phase separating polymer blends by controlling the Janus particles assembly. In this work, using mesoscale computational methods, we show that the spatial organization of Janus rods can be exploited for tuning mixtures of immiscible polymer blends. In particular, we explore the effect of different parameters that influence the rods alignment and orientation at the interface under equilibrium condition. Flow can dramatically alter the localization of these particles within the polymer blend. Therefore, we not only monitor the microstructures formed by these systems at rest, but we also do so under flow conditions and upon relaxation after flow cessation. The results of this study can be used for designing new approaches for directing nano-particles into desired morphologies, which will subsequently tune the final characteristics and properties of nano-composites.

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