

Abstract Submitted  
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**Interfacial assembly of Graphene Oxide at oil/water and polymer/polymer interfaces** ZHIWEI SUN, TAO FENG, THOMAS RUSSELL, University of Massachusetts Amherst — Amphiphilic structure of graphene oxide makes it a candidate “surfactant” to preferentially segregate to the interface between different fluids. The affinity of graphene oxide towards different phases was tuned by grafting with polystyrene (PS-NH<sub>2</sub>) through hydrogen bonding, and its interfacial behavior, both in toluene/water and polystyrene/poly(methyl methacrylate), was studied. The surface tension of the toluene/water interface decreases in the presence of PS-NH<sub>2</sub> grafted graphene oxide, indicating that graphene oxide flakes can be forced to the toluene/water interface when grafted with PS-NH<sub>2</sub>. Transmission electron microscopy shows that graphene oxide can even be forced into a “jammed” state at the water/toluene interface. In addition, polystyrene and poly(methyl methacrylate) were blended with graphene oxide, its morphology changes from island type to co-continuous structure, but the mechanism of this behavior is still not clear. These interfacial sheets may provide a model system to study buckling and crumpling behavior at interfaces.

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