

## Neutron Reflectivity Measurement for Polymer Dynamics near Graphene Oxide Monolayers

구자승<sup>†</sup>

한국원자력연구원

(jkoo@kaeri.re.kr<sup>†</sup>)

Polymer mobility at the polymer/graphene oxide (GO) interface was investigated from the measurement of dewetting dynamics. The GO monolayer at the interface between two immiscible polymer layers, polystyrene (PS) and poly(methyl methacrylate) (PMMA), significantly restricted the motion of the PMMA in the top layer, resulting in suppression of dewetting hole growth. We also found that the glass transition temperature ( $T_g$ ) of the PMMA significantly increased near the GO surface and the inter-diffusion dynamics was also reduced at the polymer-GO interface from neutron reflectivity results. The reduced mobility also occurred for the PS as a probe layer on the solid-like PMMA substrates with the GO monolayer at their interface. This indicates that both PS and PMMA have strong interaction with GO sheets due to their amphiphilic property. Vertical orientation of diblock copolymer of PS and PMMA (PS-*b*-PMMA) on GO monolayers can also prove their functionality as “an amphiphilic neutral membrane”.