

Abstract Submitted  
for the MAR17 Meeting of  
The American Physical Society

**Plasmonic nanoparticles as sensors to probe the kinetics of polymer brush formation on two-dimensional nanoparticles** ASSAD KHAN, GUOLIANG LIU, Virginia Tech — Plasmonic nanoparticles are sensitive to surroundings and can detect changes in refractive index. Based on our previous finding in plasmonic nanoparticle sensitivity, we have synthesized two-dimensional Ag nanodisks as sensors to probe the kinetics of polymer brush formation. Utilizing the unique plasmonic properties of Ag nanodisks, we demonstrated in situ the three-regime kinetics of polymer brush grafting process, and importantly, for the first time we experimentally revealed the cause of a latent regime in the process of polymer brush grafting onto a surface. The latent regime is a period of time that polymer molecules stop grafting onto the surface before molecule saturation, the cause of which has been a long-lasting puzzle in the field of polymer brush. The findings here can provide insight into the functionalization of plasmonic nanoparticles for their applications in polymer nanocomposites.

Guoliang Liu  
Virginia Tech

Date submitted: 18 Nov 2016

Electronic form version 1.4