

Abstract Submitted  
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**Polymer grafted particles: Architectural effects on the dynamics** PANAYIOTIS VOUDOURIS, F.O.R.T.H., Heraklion, Greece, JIHOON CHOI, HONG DONG, Carnegie Mellon University, Pittsburgh, USA, GEORGE FYTAS, F.O.R.T.H., Heraklion, Greece, MICHAEL BOCKSTALLER, KRIS MATYJASZEWSKI, Carnegie Mellon University, Pittsburgh, USA — We present a combined static and dynamic light scattering study of two polystyrene PS&SiO<sub>2</sub> particle solution systems in which tuning of the grafting density and molecular weight of the surface bound PS afford intermediate ( $0.5\text{nm}^{-2}$ ) and concentrated ( $0.84\text{nm}^{-2}$ ) brush densities. The different packing environment of PS chains give rise to distinctively different rich dynamic response above a threshold volume fraction that yields insight into the role of polymer grafts on the structure formation of hairy particles. This work is the first report on the missing dynamics of hybrid core-shell nanoparticles with distinct behavior intermediate between ultra soft multiarm star polymers and hard sphere colloids. With increasing grafting density of PS ligands the dynamic properties approach those of hard sphere systems while retaining some of the polymer-specific dynamic characteristics.

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