

Abstract Submitted  
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**Diffusion of Gold Nanorods in Polymer Solutions** SHARMINE

ALAM, ASHIS MUKHOPADHYAY, Wayne State University — We studied translational and rotational diffusion of gold nanorods (AuNRs) in poly(ethylene glycol) (PEG)- water solutions using polarized fluorescence correlation spectroscopy. AuNRs of aspect ratio 3.8 and two different molecular weights (5 kg/mol and 35 kg/mol) of PEG were used. Rotational diffusion constant ( $D_r$ ) and translational diffusion constant ( $D_t$ ) for AuNRs were in agreement with the theoretical calculations using Stick theory, Tirado and Garcia de la Torre's, and Broersma's relations. For higher molecular weight PEG-water solution at high concentrations, we observed faster rotational diffusion compare to theoretical estimates.

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