DMR MRSEC 1420382

2018

.

.

DNA-mediated particle-membrane interactions

Using DNA nanotechnology, we investigate how micrometer-scale particles spontaneously organize on lipid membranes to fold them into remarkable nanostructures. We have successfully functionalized particles and lipid membranes with DNA tethers, and built a laser-based microscope to measure the particle-membrane interactions with femtonewton resolution.

In future MRSEC IRG 1 experiments, we will characterize particle-membrane interactions and assess the effects of membrane fluidity and ligand-receptor affinity on spontaneous organization of membrane-bound particles. This work may enable new self-assembling, membranebased materials with remarkable optical properties, such as structural coloration.



S. Merminod and W. B. Rogers, Brandeis University



