Abstract Submitted
for the MAS17 Meeting of
The American Physical Society

**Wavelength-specific, plasmonic nanoparticle mediated rupture of polymersomes using ultrafast single-pulse irradiation**[1] JULIANNE GRIEPENBURG, ABBY ROBINSON, GINA DISALVO, SEAN O'MALLEY, DANIEL BUBB, Rutgers University-Camden — Polymersomes are robust vesicles that are self-assembled from amphiphilic diblock copolymers. They are of tremendous interest in the field of drug delivery due to their ability to stably encapsulate molecules within both the hydrophobic membrane and hydrophilic lumen of the vesicle. In this study, light-stimulated release of hydrophilic encapsulants has been achieved through the incorporation of plasmonic nanoparticles, facilitating disruption of the membrane upon ultrafast, single-pulse irradiation. Cargo release can be controlled ranging from complete vesicle rupture and instantaneous release, to membrane pore formation and effusion. Single vesicle release kinetics were found by monitoring temporal fluorescence intensity from an individual vesicle and determined to be related to pulse energy and nanoparticle location.

[1]NSF CMMI-1531783, NSF CMMI-0922946

Julianne Griepenburg
Rutgers University-Camden

Date submitted: 29 Sep 2017 Electronic form version 1.4