

Abstract Submitted  
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**Wavelength tunable nanoparticle mediated release of polymerosomes using ultrafast single pulse irradiation**<sup>1</sup> ABBY ROBINSON, GINA DISALVO, JULIANNE GRIEPENBURG, SEAN O'MALLEY, DANIEL BUBB, Rutgers University, Camden — The self-assembly of amphiphilic di-block copolymers into polymeric vesicles, commonly known as polymerosomes, is an area of high interest in research due to the potential applications in the field of drug delivery. Polymerosomes are fully synthetic robust vesicles composed of a hydrophobic membrane and a hydrophilic core, providing the ability for stable dual-encapsulation of a variety of molecules. Methods have been developed for triggered encapsulant release using ultrafast, single-pulse irradiation with visible and near infrared light to provide a non-invasive method of achieving spatial and temporal control. We have shown that the incorporation of gold nanoparticles (AuNP) within the vesicle membrane provides wavelength specific vesicle rupture at 532 nm. The polymerosome release profile can be tuned depending on the laser fluence, and the release wavelength can be changed by altering nanoparticle characteristics including shape, composition, and location.

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