ND EPSCoR
Center for Sustainable Materials Science
Soysomes: Soy-based nanoparticles for molecular delivery
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Award Title	INSPIRE-ND
NSF Award Number:	OIA-1355466
Principal Investigator:	Kelly A. Rusch, Ph.D., P.E.
Lead Institution Name:	North Dakota State University
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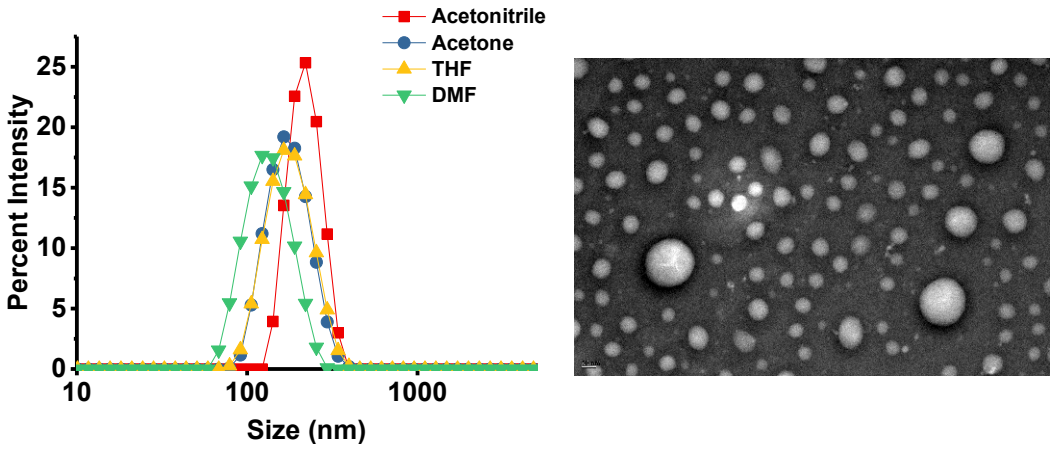
What is the outcome or accomplishment? (1-2 short sentences describing it and why it is transformative; 50 word max. suggested)*

We have shown that biobased soybean oil fatty acid esters form stable nanoparticles. This discovery will open an access to sustainable nanotechnology. We have used the product for molecular delivery applications. We have also showed that soy-based composites and nanoparticles can efficiently encapsulate and transport hydrophobic molecules in a biological environment.



Nanoprecipitated sucrose soyate forms uniformly stable, nanoscale architectures

What is the impact? (1-2 simple sentences describing the benefits for science, industry, society, the economy, national security, *etc.*; suggested 50 word maximum)

The technology can be used in biomedical, agricultural and nutraceutical settings for

formulating controlled- and extended-release platforms. These systems are utilized for reducing dosing frequency of active agents, reducing the cost of formulations, and improving end-user compliance. This will increase the applicability of nanotechnology in medical and engineering areas.

What explanation/background does the lay reader need to understand the significance of this outcome?

Application of nanotechnology has changed the landscape of engineering and medicine. However, both the top-down or bottom-up approach of synthesized nanomaterials is an energy-consuming process. Under this NSF funding through ND EPSCoR, under the Innovative and Strategic Program Initiatives for Research and Education-North Dakota (INSPIRE North Dakota) NSF EPSCoR RII Track-1, we have generated agro-based products to design nanotechnology building blocks using a reduced carbon footprint and energy consumption.