

# 9<sup>th</sup> World Drug Delivery Summit

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## Protein nanocarriers for drug delivery applications

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Protein biopolymers are attractive materials for developing nanoparticulate based drug delivery systems. To this end, food-grade protein biopolymers offer many advantages including biodegradability, demonstrated safety as food materials, and the amino acids can be used for further chemical modification to optimize drug delivery systems. Our research focuses on core-shell nanoparticles developed using zein, a water-insoluble corn protein as the core and hydrophilic/amphiphilic milk proteins, polymers or lipids as the shell. The focus of our research is to understand the influence of core-shell composition on drug delivery by oral and non-oral routes of drug administration. The presentation will focus on the development and *in vitro* as well as *in vivo* characterization of protein core-shell nanoparticles by oral, topical and intravenous administration for a wide variety of drugs. The talk will present the application of the core-shell nanoparticles for enhancing the water solubility, membrane permeability, drug stability, sustain drug release and improve drug bioavailability by various routes of drug administration.

### Biography

Omathanu Perumal is a Professor and Head of Department of Pharmaceutical Sciences at South Dakota State University. He has over 18 years of experience in developing new drug delivery systems. His group has developed natural protein based drug delivery platform for various drug delivery applications. In addition his group has developed novel topical and transdermal drug delivery approaches. He has published close to 50 peer reviewed publications and delivered over 100 presentations. He has four issued patents and two pending patent applications. He is the Founder and Chief Scientific Officer of Tranzderm Solutions Inc. He serves as the Editor-In-Chief of *Journal of Biomedical Nanotechnology* (Impact factor: 5.338). He is the recipient of Patricia Walker Skin Cancer Research Award from Skin Cancer Foundation, F.O. Butler Award for excellence in research, Distinguished Researcher award and Intellectual Property & Commercialization award from South Dakota State University.

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