The Purdue College of Pharmacy is pleased to honor and recognize the outstanding research and scholarship generated by our faculty each month. This month we highlight Drs. Elizabeth Topp, Professor of Industrial Pharmacy and Tony Zhou, Assistant Professor of Industrial and Physical Pharmacy. Their recent publication, “Effects of drying method and excipient on structure and stability of protein solids using solid-state hydrogen/deuterium exchange mass spectrometry (ssHDX-MS)”, can be read in International Journal of Pharmaceutics (August, 2019; DOI: 10.1016/j.ijpharm.2019.118470). The
Almost half of the pharmaceutical biological products are formulated into solids to improve their stability. Producing these solids via traditional freeze drying has many disadvantages including long cycle time (>48 hours), batch processing and low energy efficiency. However, with ssHDX-MS technology, researchers at Topp lab have been able to analyze the differences in protein structure between different formulations, which enabled prediction of long-term physical stability. "When ssHDX-MS was first developed in the Topp lab, it was applied to look at freeze-dried formulations of protein drugs. The results reported in this article provide a fundamental understanding in physical stability of spray-dried protein products."

study was conducted with PhD student in IPPH, Nathan Wilson.