COLLEGE OF PHARMACY
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Pharmaceutical Sciences Seminar Series

Wednesday, April 3, 2024
4:00pm
2548 North University Building
Zoom

"Exploring Release Mechanisms from Amorphous Solid Dispersions"

Presented by:

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Abstract: Amorphous solid dispersions (ASDs) are increasingly being used to overcome solubility challenges of emerging drug candidates. As the chemical diversity of drugs formulated as ASDs increases, it becomes important to elucidate release mechanisms as well as the interplay between drug and polymer properties. Herein, we will discuss factors impacting release from two commonly used ASD polymers, copovidone and hypromellose acetate succinate (HPMCAS). Copovidone is a neutral synthetic polymer commonly used in ASDs prepared by hot melt extrusion, while HPMCAS is more typically used in spray dried products, and is a weakly acidic polymer with pH-dependent solubility. Using surface normalized dissolution rate measurements of both drug and polymer release, as well as a variety of drugs with different chemistries and physicochemical properties, important factors that impact release rate as a function of drug loading will be discussed. For copovidone systems, we will also explore how ternary phase diagrams provide insight into patterns of release behaviour, while for HPMCAS ASDs, the vital role of microenvironmental pH will be illustrated.

Lynne S. Taylor is the Retter Distinguished Professor of Pharmacy in the Department of Industrial and Molecular Pharmaceutics, Purdue University. Prior to moving to academia, she spent several years working at AstraZeneca in Sweden developing new drugs. Lynne received a Bachelor of Pharmacy degree with First Class Honours from the University of Bath in the UK. Her PhD was undertaken at the University of Bradford, UK, in the area of Pharmaceutical Technology. After her PhD, Lynne was a postdoctoral researcher at the University of Wisconsin-Madison. Research in Lynne's group is directed toward exploring the science underlying the preformulation, formulation and manufacturing of drugs and other bioactive substances, with a particular focus on poorly water-soluble compounds. She has published more than 350 peer reviewed articles. Lynne has received a number of awards including the Coblentz Society Craver Award in Applied Vibrational Spectroscopy (2014), the Journal of Pharmaceutical and Biomedical Analysis Outstanding Manuscript award (2007), the Ebert prize for the best manuscript in the Journal of Pharmaceutical Sciences (2012) and the Pharmaceutical Research meritorious manuscript award (2012), the Provost's Award for Outstanding Graduate Student mentor (2019) and the Dale E. Wurster Research Award (2020). Lynne is a Fellow of the Royal Society of Chemistry and the American Association of Pharmaceutical Scientists, and is editor-in-chief of the ACS journal, *Molecular Pharmaceutics*.