

Dr. Huidan (Whitney) Yu holds the position of full Professor in Mechanical Engineering at Purdue University Indianapolis, alongside her role as an adjunct Research Professor in Vascular Surgery at Indiana University School of Medicine. She possesses dual Ph.D. degrees, one in Physics from Peking University, China, and another in Aerospace Engineering from Texas A&M University, USA. Dr. Yu augmented her academic journey with postdoctoral research stints at Los Alamos National Laboratory and The Johns Hopkins University. Her research prowess centers on Computational Fluid Dynamics (CFD), focusing on modeling and simulating complex flows. Dr. Yu's expertise particularly shines in employing the kinetic-based and GPU-parallelized lattice Boltzmann method for tackling intricate flow systems encompassing multiple scales and physics domains. Over the past two decades, she has contributed over 100 papers to esteemed journals and delivered numerous impactful talks. In recent years, Dr. Yu's endeavors have been channeled into pioneering engineering technologies utilizing image-based CFD. Her pursuits encompass two primary applications: Firstly, she delves into the resolution of pore-scale porous media flows (PSPMFs), integrating mass and heat transfer, as well as interfacial dynamics. These efforts find application across diverse engineering domains such as nuclear waste management, drug delivery, energy storage, and oil/gas extraction. Understanding PSPMFs' intricacies, including heterogeneity and complex pore interconnectivity, is pivotal for engineering innovation. Secondly, she focuses on addressing hemodynamic irregularities for accurate diagnostics and therapeutics of cardiovascular diseases within patient-specific contexts. Her groundbreaking research has led to the issuance of two US patents, showcasing potential breakthroughs in noninvasive cardiovascular disease assessment and predictive modeling of therapeutic outcomes. Dr. Yu fosters close collaborations with scientists, engineering experts in national laboratories and universities, and medical practitioners in hospital settings, further enriching her interdisciplinary approach to research and innovation.