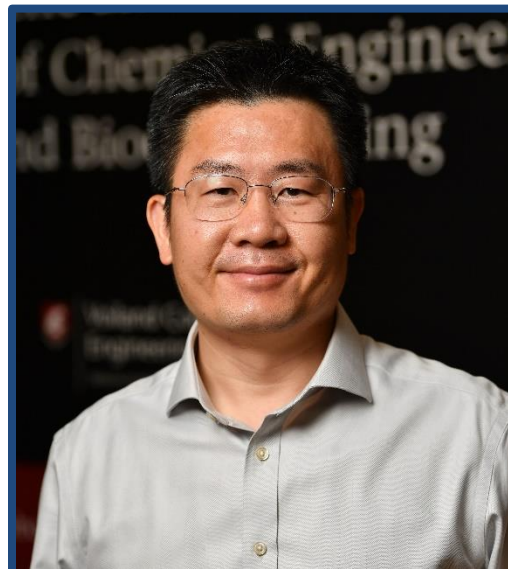


# **“Design of Sequential Catalytic Solvolysis Process for Selectively Deconstructing Waste Plastics”**

**Wednesday  
September 15, 2021  
3:30 pm  
Wu and Chen Auditorium  
Levine Hall**



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## **Abstract**

Environmental plastic problems have recently arisen as a core subject of global debate and concern. Plastic products for multiple applications have risen from 1.7 million in 1950 to 368 million tons in 2019 and are projected to reach 1,800 million tons by 2050. Recycling plastics and enabling the circular economy are essential to mitigate the accumulation of plastic wastes. However, the grand challenge of recycling waste plastics is the heterogeneity of comingled plastic wastes, containing various incompatible polymers, such as polyethylene (PE), polypropylene (PP), polyethylene terephthalate (PET), polyamide (PA), *etc.*, and additives and contaminants. This lecture will discuss the catalytic solvolysis processes that convert various plastics, such as polyesters, polyamides, and polyolefins, to value-added products such as monomers or hydrocarbon fuels and lubricants. Furthermore, a sequential catalytic solvolysis process, in which an individual polymer or classes of polymers in a plastic mixture is selectively deconstructed stage-by-stage, is designed. This novel process may enable a cost-competitive chemical upcycling method for processing comingled plastic wastes without laborious physical sorting.

## **Bio**

Hongfei Lin is an Associate Professor in the Voiland School of Chemical Engineering and Bioengineering at Washington State University. He received both his B.E. and M.S. degrees from Tsinghua University, a Ph.D. degree in Chemical Engineering from Louisiana State University, and has been a postdoctoral fellow at the University of California, Santa Barbara. Dr. Lin's research incubates innovative chemical catalysis technologies to tackle current and future energy and environmental challenges. Topics of current interest include chemical upcycling of waste plastics, biomass to chemicals and fuels, CO<sub>2</sub> capture and utilization, chemical hydrogen storage, *etc.* He is the international advisory board member of *Energy Technology*, the editorial board member of *Advanced Composites and Hybrid Materials*, and the past program chair of the Energy and Fuels Division of the American Chemical Society.

**Fall 2021 CBE Seminar Series**

