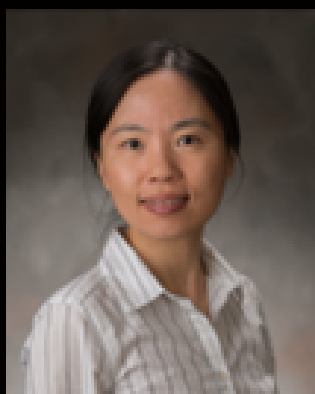


Biological Systems Engineering

Departmental Colloquium



Wei Niu

Associate Professor

Chemical & Biomolecular Engineering

UNL

Biocatalytic Syntheses of Chemicals from Renewable Feedstocks and Beyond

Biocatalysis is at the center of green economy to address the sustainability challenge facing our society. Enlisting enzymes and microbes for the conversion of renewable feedstocks, e.g., biomass, CO₂, into value-added chemicals present viable solutions to address issues caused by the rapid industrialization.

Our research gears towards the study and engineering of enzyme and microbial biocatalysts for alternative or replacement of current chemical routes.

Two projects with this focus will be discussed: (1) Carboxylic acid reductases (CARs) catalyze the reduction of a broad range of carboxylic acids into aldehydes, which can serve as common biosynthetic precursors to many industrial chemicals. We devoted efforts into the characterization and engineering of CAR enzymes, including hybrid CARs and the development of high throughput selection strategy for directed evolution. And (2) Lignin is a complex, aromatic heteropolymer that accounts for ~25% of plant biomass by weight and 40% of the carbon. *Pseudomonas putida* strains are able to catabolize aromatic compounds derived from thermochemical or catalytic breakdown of lignin. Our efforts into the engineering of *P. putida* to convert lignin-derived aromatic compounds into commercially important chemicals and expanding its carbon utilization capability will be presented.

Wednesday, January 24

12:00-1:00pm

Chase Hall 219

All faculty, staff and students
are invited.

Feel free to bring your lunch!