



Department of Civil & Environmental Engineering & Earth Science

EE/ES Series

April 16, 2018

217 DeBartolo Hall 4:00 p.m.-5:00 p.m.

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Title:

A Process Pipeline of Lignin Valorization

Abstract:

The complex biochemical properties of lignin have so far been major obstacles to deriving valuable chemicals from this biopolymer, which is one of the most abundant polymers on Earth. Lignin's renowned recalcitrance is largely attributable to its racemic nature and the variety of covalent inter-unit linkages through which its aromatic monomers are linked. Indeed, unlike other biopolymers whose monomers are consistently inter-linked by a single type of covalent bond, the monomeric units in lignin are linked via non-enzymatic, combinatorial radical coupling reactions that give rise to a variety of inter-unit covalent bonds in mildly branched racemic polymers. Yet, despite the chemical complexity and stability of lignin, significant strides have been made in recent years to identify routes through which valued commodities can be derived from it. This presentation describes the Great Lakes Bioenergy Research Center's approach to creating a combination of chemical and biochemical process pipeline through which degradation of lignin to aromatic monomers can lead to the derivation of commercially valuable products.

