



Department of Chemistry Seminar

Speaker:

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10:00 AM • CP-114B

TOWARDS CATALYTIC OXIDATIVE DEPOLYMERIZATION OF LIGNIN

Abstract: Lignin is one of the most abundant and underutilized biopolymers on earth. Primarily composed on three monolignol units (sinapyl, coniferyl, and p-coumaryl alcohol), lignin is formed through a radical pathway resulting in an assortment of linkages, of which the β -O-4 linkage is the most prevalent (up to 60% in some hardwood species). In planta, lignin plays an important role in water transport and in protecting plants from chemical and biological attack. Traditional attempts to depolymerize lignin have focused on the cleavage of β -O-4 linkages via thermal or reductive routes. However these pathways lead to low-value, unstable product mixtures. Moreover, typical product yields are low and the highly corrosive reaction medium results in added expense. More recently, catalytic oxidations have been studied as a viable means to lignin utilization. The present work will review the state-of-the-art of lignin oxidations, and focus on stoichiometric and catalytic attempts to oxidize lignin and lignin model compounds in order achieve selective stepwise depolymerization of lignin. Specifically, activated dimethyl sulfoxides and LDH catalysts were evaluated for lignin and/or lignin model compound oxidations leading, in some cases, to unexpected products.



Refreshments will be served at this event.