

UNLOCKING THE SECRETS TO LIGNIN CONVERSION

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Lignin is one of three main plant cell wall components, comprising ~15--30% of the dry weight of lignocellulosic biomass. The amount of underutilized lignin that is already available could displace a significant fraction of non-renewable feedstocks. However, the structural complexity of lignin and the diversity in lignin structures from different plant sources makes its utilization challenging. Nuclear magnetic resonance (NMR) is commonly used as a tool for studying the chemical composition of complex compounds, however its application to biomass has been traditionally limited for a number of reasons. This presentation illustrates how advanced NMR approaches can be applied along with other analytical techniques to characterize lignin and lignin-derived products. The ultimate goal is to gain unique insight into the routes that convert lignin selectively into fuels, chemicals, and materials.