

CHEMICAL & BIOMEDICAL ENGINEERING GRAD STUDENT SEMINAR

Decoding Plant Cell Walls: Lignin Chemistry and 2D Gel-State NMR

–Structural Analysis of Lignocellulosic Biomass

Friday, April 24, 2026

11:00 AM

COE B135

Dr. Hoon Kim

RESEARCH CHEMIST

USDA Forest Products Laboratory in Madison,
Wisconsin

Plant cell walls are complex natural composites composed primarily of cellulose, hemicelluloses, and lignin. Among these components, lignin is the most structurally complex polymer and plays a significant role in determining cell wall properties and the utilization of lignocellulosic biomass. Understanding lignin architecture is essential for advancing biomass conversion, renewable materials, and sustainable forest products.

This seminar will discuss the fundamentals of lignin chemistry and recent advances in 2D NMR spectroscopy method for direct structural analysis of whole plant cell walls, with particular emphasis on the FPL Gel-State NMR method, which enables high-resolution multidimensional NMR analysis of finely ball-milled biomass samples. Research approaches for investigating lignin structure, plant cell wall architecture, and genotype-dependent variations in lignocellulosic biomass will be discussed.



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