Biomass Acetates for Value Added Products

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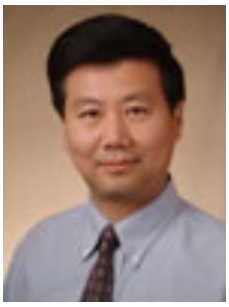

Abstract.
Direct acetylation of carbohydrates and lignin in biomasses (agricultural byproducts) and co-products of ethanol production (DDG) will provide an opportunity to develop inexpensive, unique and environmentally friendly bioproducts such as composites. Limited attempts on acetylating biomass and their components have not been successful in obtaining efficient (high degree of substitution) and cost-effective acetylation. In this research, we will identify high efficiency catalysts that can provide combined acetylation of the byproducts and co-products and the acetylated products (cellulose, hemicellulose and lignin acetates) will be used to develop composites. The acetylated portion of the biomass can act as the thermoplastic matrix and the non-acetylated portion will be the reinforcing material. Composites from the acetylated biomass will be similar to wood reinforced plastic lumber currently used for construction applications.