**Deconstruction of Feedstock for a Biochemical Biorefinery**

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It is possible that, in the near future, liquid fuels will be obtained from non-starch based feedstock. In the U.S. the hardwood species *Liquidambar styraciflua* (sweetgum) and the herbaceous species *Panicum virgatum* (switchgrass) could possibly be feedstock from which biofuels can be produced. Feedstock usually contains cellulose, lignin and hemicellulose. To be economically competitive, a biochemical biorefinery must utilize a process that metabolizes all sugars, including five carbon sugars like xylose that are obtained from hemicellulose. Unfortunately, hemicellulose polymers do not depolymerize directly into xylose, but form oligomers of various lengths, which can, in turn, form furfural and acetic acid; both are inhibitors of the fermentation-based process. Understanding hemicellulose depolymerization is critical because it impacts, through the formation of fermentation inhibitors, the overall conversion process by lowering the biofuel production yields. Results on the fractionation by centrifugal partition chromatography of individual oligomer fragments, as well as their tracking throughout the depolymerization process will be presented. The extraction of valuable co-products, like shikimic acid and rutin, from sweetgum and switchgrass, respectively, connected to the sugar release process will also be covered.

