Utilization of Switchgrass, *Panicum virgatum L*, as a Biofuel Feedstock

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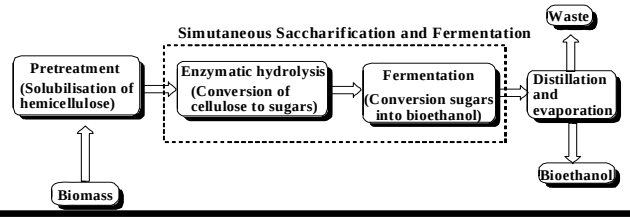
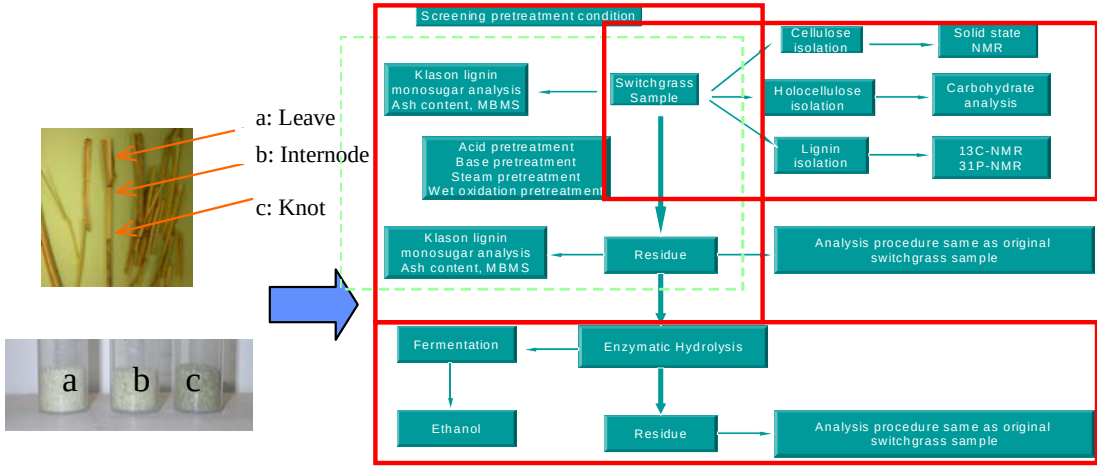
PROGRAM DESCRIPTION

- Developing technologies for biofuel production from lignocellulosics requires suitable bioresource, tunable pretreatment technology, enhanced enzymatic hydrolysis and fermentation system, and efficient process for ethanol production.
- Thesis research emphasize is on bioresource selection from switchgrass, pretreatment chemistry and pretreatment technologies for bioethanol production from switchgrass.



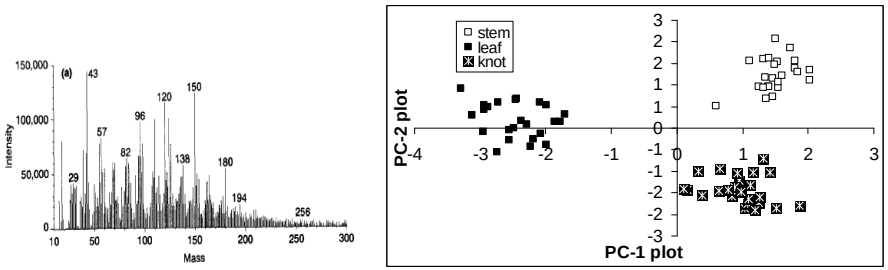
TECHNICAL DETAILS

- Feedstock selection
- Biomass characterization
- Pretreatment technologies
- Pretreatment chemistry



PAYOFF

- Feedstock selection



Principle component analysis of py-MBMS spectra of four genotype switchgrass

- Optimized pretreatment technology for switchgrass
- Enhanced bioethanol production

KEY ACCOMPLISHMENTS

- Feedstock selection: Chemical profiles of morphological portion of switchgrass, leaf, stem, and knot, have abnormal features
- Pretreatment technologies: ongoing
- Pretreatment chemistry: ongoing

$$\left[C_6H_{10}O_5\right]_n + nH_2O \xrightarrow[\text{Hydrolysis}]{\text{Enzyme}} n\left[C_6H_{12}O_6\right] \xrightarrow{\text{Fermentation}} 2n\left[C_2H_5OH\right] + 2nCO_2$$

Professor AJ Ragauskas, Supervisor