Our labs are part of the Center for Direct Catalytic Conversion of Biomass to Biofuels (C3Bio) team and our main goal is to develop advanced mass spectrometric methods to enable rapid molecular-level characterization of mixtures.

The areas of research that we are involved with on this project:

- **Development of mass spectrometric methods for structural elucidation** of products of fast pyrolysis and catalytic degradation of cellulose, sugars, and lignin.

- **Analysis of biofuels** by HPLC/MS^n

- **Synthesis of model compounds** to support above research: polysaccharides and aromatic compounds with different functional groups (e.g., ether, carboxylic acid, aldehyde and ketone)

- **Instrumentation**: a novel tandem mass spectrometer, HPLC/LQIT/LQIT (TWIN), will be built, and eventually converted into HPLC/LQIT/LQIT/FT-ICR to become the world’s most powerful mass spectrometer in mixture analysis. Also, methods will be implemented for real-time screening of products while they are formed (TOF: ms time resolution).