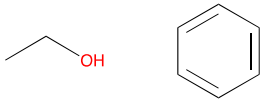
The Development of Yield-Based Sooting Tendency Measurements and Modeling to Enable Advanced Combustion Fuels

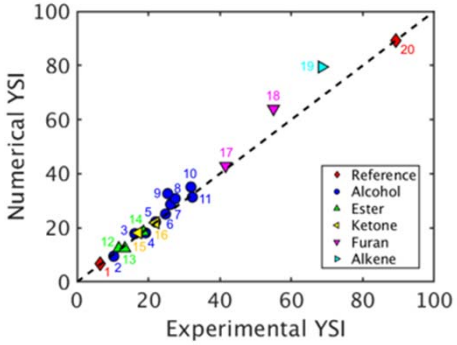
Goals

Use measured and predicted sooting tendencies to select fuels that reduce emissions, to develop emission indices relevant to real engines, and to validate and improve detailed chemical kinetic mechanisms



Approach

Measure sooting tendencies of promising biofuel components and of fuels that have been studied in engines; numerically simulate them with a flamelet-based model and reactive molecular dynamics



Potential Impact on Co-Optima Goals

This project will enable: 1) the selection of biomass-derived fuels that minimize soot emissions; 2) CFD simulations that can accurately predict soot and therefore achieve the highest soot reductions

Team Members

PI: Lisa D. Pfefferle (Yale)
Co-PI: Charles S. McEnally (Yale)
Co-PI: Yuan Xuan (Penn State University)