**Large eddy simulation of an oxy-coal combustor**

Alexander J. Josephson, Benjamin J. Isaac, David O. Lignell, Thomas H. Fletcher

Accepted for presentation at

9th U.S. National Combustion Meeting

Organized by the Central States Section of the Combustion Institute , Cincinnati, Ohio

May 17-20, 2015

Large eddy simulation (LES) of a 100 kW coal-fired oxy-fuel combustor is presented. Oxy-coal combustion is a promising technology for carbon capture in coal-fired power plants. The combustor is a 1.7 m long, 0.6 m diameter, down fired unit. We compare simulation results to experiments including heat flux, temperature, and exit compositions. Soot formation in coal combustion is important for accurate capture of radiative emission and flame temperatures. Soot formation will be modeled using a method of moments. We will present results of a coal soot model. Uncertainty quantification of key soot rate parameters and representation of the particle size distribution could be done using input parameters and data from these simulations.