**Soot Dissipation in Oxy-Coal Systems**

Alex Josephson, Neal Gaffin, and David Lignell

Brigham Young University

With the rising concern of carbon dioxide’s effects on climate change, research involving oxy-fuel combustion has increased significantly. The environment of an oxy-fuel system can vary greatly from that of conventional air-fired systems; as a result, models to describe system physics must be adapted to account for these differences. This work focuses on some of the differences found in the oxy-coal environment and the effects this has on soot consumption. Oxidation rates are explored and models optimized to experimental data published in the literature. Model parameters’ uncertainty are also computed and presented. Gasification rates are considered and modeled in a similar way with their respective uncertainties. Effects of gasification, which is typically neglected in conventional systems, are also explored in simulation of an oxy-fuel combustor at the University of Utah; results are presented.