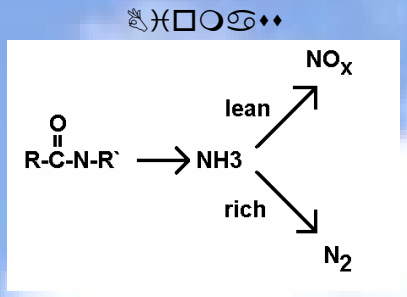
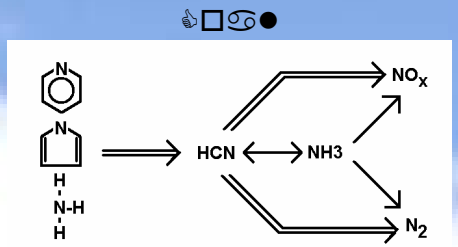
The Gas Phase Fuel Nitrogen Chemistry Comparison of Low Grade Fuels

OBJECTIVE::::::::: - Provide repeatable data to study the impact of fuel-N functional groups on gas phase fuel-N chemistry in a pilot scale, swirl stabilized burner.





EXPERIMENTAL

Straw

Operating conditions: 20 kg/hr (88.5 kW)

Equivalence ratio : 0.65

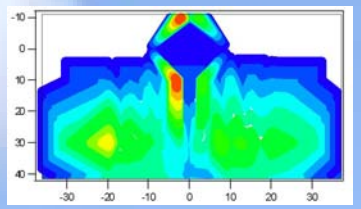
Black Thunder

Operating conditions: 14.5 kg/hr (94.3 kW)

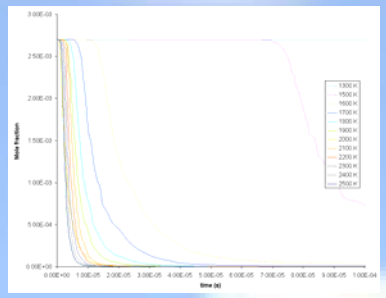
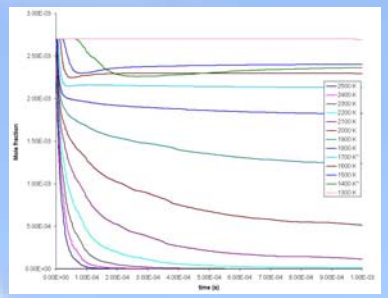
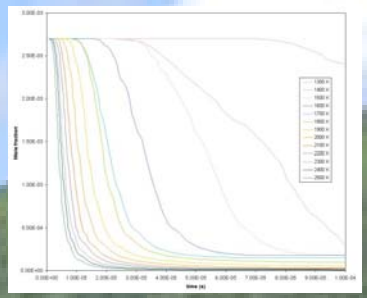
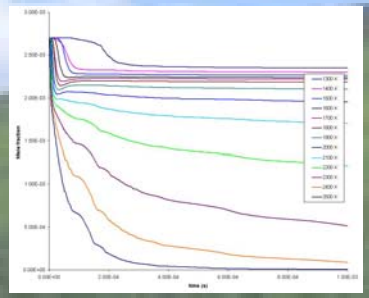
Equivalence ratio: 0.7

-- Profiles of important gas species --

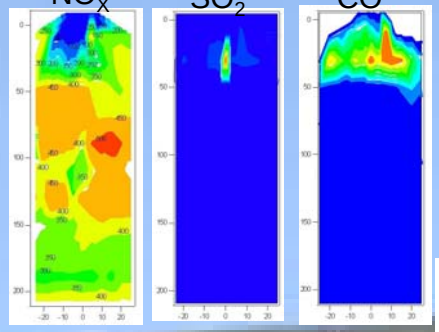
NH_3



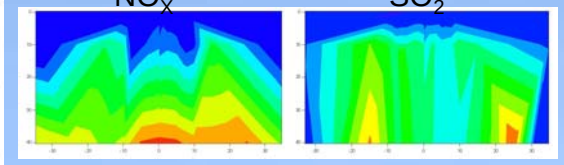
Kinetics Study: CHEMKIN calculations show that HCN is more stable than NH_3 in an environment similar to reducing conditions in a biomass flame.

	NH_3	HCN
Kilpinen 97		
GRI Mech 3.0		

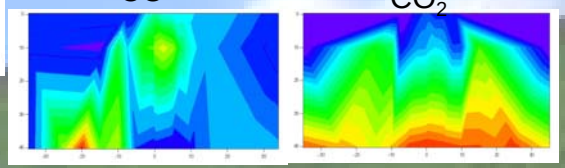
NO_X SO_2 CO



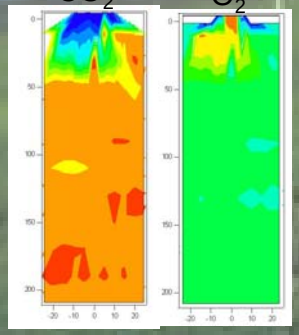
NO_X SO_2



CO CO_2



CO_2 O_2



O_2