

Abstract Submitted  
for the GEC05 Meeting of  
The American Physical Society

**Production of Syngas via Biomass Pyrolysis in Thermal Hydrogen/Oxygen Plasma** MILAN HRABOVSKY, MICHAL HLINA, MILOS KONRAD, VLADIMIR KOPECKY, Institute of Plasma Physics AS CR, Prague, DEPARTMENT OF THERMAL PLASMA TEAM — The plasma reactor for pyrolysis of waste materials with dc arc gas/water plasma torch was operated at arc power up to 140 kW using wood as a model substance. High enthalpy, low-density hydrogen/oxygen plasma generated in the torch interacted with a flow of treated material in a reactor volume. The experimental results prove that homogeneous heating of volume of plasma reactor and proper mixing of plasma with treated material was ensured despite of very low plasma mass flow rate and constricted form of plasma jet. The conditions within the reactor ensured complete destruction of tested substance. Synthetic gas with high content of hydrogen and carbon monoxide and low concentration of carbon dioxide was produced. Due to composition of plasma and its very low mass flow rate the composition of reaction gases was close to stoichiometric composition of cellulose fully dissociated to hydrogen and carbon monoxide with their concentrations exceeding 40%. The authors gratefully acknowledge the support of this work by the Grant Agency of the Czech Republic under the project No. 202/05/0669.

Milan Hrabovsky  
Institute of Plasma Physics AS CR, Prague

Date submitted: 10 Jun 2005

Electronic form version 1.4