

Abstract Submitted
for the GEC13 Meeting of
The American Physical Society

Syngas production from tar reforming by microwave plasma jet at atmospheric pressure: power supplied influence¹ HENRIQUE DE SOUZA MEDEIROS, LUCAS S. JUSTINIANO, MARCELO P. GOMES, ARGEMIRO SOARES DA SILVA SOBRINHO, GILBERTO PETRAÇONI FILHO, Technological Institute of Aeronautics — Now a day, scientific community is searching for new fuels able to replace fossil fuels with economic and environment gains and biofuel play a relevant rule, mainly for the transport sector. A major process to obtaining such type of renewable resource is biomass gasification. This process has as product a gas mixture containing CO, CH₄, and H₂ which is named synthesis gas (syngas). However, an undesirable high molecular organic species denominated tar are also produced in this process which must be removed. In this work, results of syngas production via tar reforming in the atmospheric pressure microwave discharge having as parameter the power supply. Argon, (argon + ethanol), and (argon +tar solution) plasma jet were produced by different values of power supplied (from 0.5 KW to 1.5 KW). The plasma compounds were investigated by optical spectroscopy to each power and gas composition. The main species observed in the spectrum are Ar, CN, OII, OIV, OH, H₂, H(beta), CO₂, CO, and SiII. This last one came from tar. The best value of the power applied to syngas production from tar reforming was verified between 1.0 KW and 1.2 KW.

¹We thank the following institutions for financial support: CNPq, CAPES, and FAPESP.

Henrique de Souza Medeiros
Technological Institute of Aeronautics

Date submitted: 14 Jun 2013

Electronic form version 1.4