Project Title:
Plasma-catalysis effects on LCF Perovskite Ion Transport Membrane processing of CH₄

Project Reference Code:
UA-Uddi

Hosting Institution:
University of Alabama-Tuscaloosa

Hosting Institution Location:
Tuscaloosa, AL

Project Description:
**Plasma-Catalysis:** study the Plasma-Catalysis (PC) effect of non-equilibrium low temperature plasma on ceria nano-catalysts to produce different chemicals (syngas- CO+H₂) using CO₂, CH₄, air as feedstock, at 1 atm pressure, in the temperature range 400-900 °C, through experiments. The effect of plasma on the surface reactions is to be studied.

**Method:** Assemble a home built reactor to test ceria nano-powder with RF discharge will be used. Various types of optical/ laser diagnostics of the plasma-surface interaction will be done. Optical diagnostics includes plasma emission spectroscopy, plasma imaging with high speed ICCD camera, PLIF- Planar Laser Induced Fluorescence etc. The exhaust gases will be analyzed for temporal species composition using a Quadrupole Mass Spectrometer (QMS).

**Disciplines:**
Chemistry, Math, Engineering

U.S. citizenship required to participate in this project

**Name(s) of Mentor(s) and contact information:**
Dr. Mruthunjaya Uddi
Mechanical Engineering, University of Alabama, Office: SERC 3072B
Email: uddi@ua.edu
Ph: 205 348 4719

**Internship Coordinator/ HR manager:**
Amy W. Lang, Associate Professor
Aerospace Engineering & Mechanics, The University of Alabama
211 Hardaway Hall, Tuscaloosa, AL 35487
office 205-348-1622
alang@eng.ua.edu
http://aem.eng.ua.edu/
The name and contact information of personnel at the hosting is provided for further assistance with questions regarding the hosting institution or the project.

Interns will not enter into an employee/employer relationship with the Hosting Site. No commitment with regard to later employment is implied or should be inferred.