

# Experience Profile

## David E. Petrick

### Research area

Molecular beam analysis of biomass pyrolysis

### Education

**M.S. Chemical Engineering, Colorado School of Mines, 2001**

**B.S. Chemical Engineering, Colorado School of Mines, 2000**

### Expertise

Experience in developing thermal systems for analysis of chemical reactions, liquefaction of cryogenics, and control of chemical process equipment. Laboratory research background in design and fabrication of combustion-related processes such as flow reactors and pyrolysis furnaces. Design and analysis capabilities with extensive knowledge of fluid and material properties and corresponding ASME codes. Comprehensive background in numerical heat transfer analysis, fluid dynamics, and process design using software and basic engineering tools. Experienced in research and development of system designs for fuel production. Detailed experience in thermochemical conversion of biomass to liquid transportation fuel and chemical plant design. Specialization in analysis of installation of cryogenic fluid systems as well as pilot plant design, fabrication, and startup.

### Industries/Experience

*Redstone Aerospace*, on assignment at Kennedy Space Center

*MicroChem Technologies*

*Colorado School of Mines*, Golden, CO

- Chemical Engineering Department
- Corporate contract research involving combustion chemistry, heat transfer analysis, and data acquisition for NASA's STS-107 microgravity water mist fire suppression experiment

*RES Group*

- Combustion science research.

*Technology Applications Inc.*, Boulder, CO.

- Specialization in cryogenic systems and materials engineering employing MEMS-based technology. Experience handling liquid nitrogen, helium, and oxygen in research environment
- Cryocooler development and cryogenic system engineering

*SolidWorks, Pro Engine*

- Software modeling experience

## **Experience Profile**

### **Publications**

D.E. Petrick, et al. " Design and Analysis of a Scalable In-Situ Cryogen Production Facility for Space Exploration." 2005 Cryogenic Engineering Conference. American Institute of Physics.

D.E. Petrick, et al. " High-Efficiency Extraction and Utilization of Lunar Solar Wind Volatiles." 2007 Space Technology Applications International Forum. American Institute of Physics.