

# **Post Doctoral Research Appointment**

**in:**

## **Diesel Engine Aftertreatment System Modeling and State Estimation.**

The Intelligent Systems and Control Laboratory and the Advanced Power Systems Research Center in the Department of Mechanical Engineering - Engineering Mechanics at Michigan Technological University invite applications for appointment of a post doctoral research position in Diesel Engine Aftertreatment System Modeling and State Estimation.

This position is made possible by a recent grant from the U.S. Department of Energy and is available immediately. The selected individual would work closely with the project team members including Drs. John Johnson, Jeffrey D. Naber, Gordon G. Parker, and Song-Lin (Jason) Yang of the Department of Mechanical Engineering-Engineering Mechanics, and Dr. Jason M. Keith of the Department of Chemical Engineering.

Our research focuses on developing models and nonlinear state estimation strategies for diesel engine aftertreatment devices suitable for future on-board diagnostic (OBD) strategy development. Selective catalytic reduction (SCR) and catalyzed particulate filters (CPF) are of particular interest. Developing fundamental and practical knowledge of how their performance varies when engines are run with biodiesel fuel blends is a goal. Experimental model validation, calibration and adaptation as a function of sensor technology will also be investigated. The research will be carried out at Michigan Tech's Advanced Power Systems Research Center facilities, participating national labs (ORNL and PNNL), diesel engine OEMs (Cummins, John Deere and Navistar), catalyst developers (Johnson Matthey) and sensor suppliers (Watlow).

We seek a motivated researcher with a passion for modeling and dynamometer-based experimentation of diesel engine subsystems. A Ph.D. degree in mechanical or chemical engineering is required.

Demonstrated experience in four of the following topics is desired: (1) dynamic or kinetic system simulation, (2) internal combustion engines, (3) dynamometer engine testing with emissions testing (4) C or MATLAB programming, (5) chemical kinetics, (6) numerical methods for solution of partial differential equations (7) optimization methods and (8) advanced controls (e.g. state estimation, linear system theory, nonlinear control, optimal control, etc.), (9) advanced thermodynamics, fluid mechanics and CFD, and (10) catalysis.

Michigan Tech is in the community of Houghton, Michigan. It lies in the heart of Michigan's scenic Keweenaw Peninsula, surrounded by Lake Superior and vast expanses of forest. It is an ideal location not only for research but also for enjoying outdoor recreation including backpacking, hiking, camping, fishing, and both alpine and cross-country skiing at Michigan Tech owned properties. For details visit: <http://www.mtu.edu/>. To apply please send an email statement of interest and a .pdf of your resume to Dr. Gordon Parker [ggparker@mtu.edu](mailto:ggparker@mtu.edu).

*Michigan Technological University is an equal opportunity educational institution/equal opportunity employer.*