

**Hybrid SOFC/Turbine Integration and Controls Research  
at NETL****Dr. David Tucker****U.S. Department of Energy,  
National Energy Technology Laboratory (NETL)****日時: 2010年11月17日(水) 16:30-17:30****会場: 東京大学工学部 2号館 3F 31A会議室****要旨**

In pursuing the implementation of highly efficient, emission-free power, the U.S. Department of Energy (DOE) is looking to the development of hybrid power systems that make use of the coupling of an electrochemical device with a heat engine, or more specifically, a solid oxide fuel cell (SOFC) and a gas turbine. The synergies of coupling these systems in a hybrid configuration provide the potential for reaching the highest possible electric conversion efficiency ever realized. As such, advanced hybrid power systems that incorporate a fuel cell and a gas turbine represent fossil or renewable energy production technology that provide the opportunity for a significant improvement in generation efficiency. While much of the DOE-sponsored research focuses on improving the performance of solid oxide fuel cells, a hardware simulation facility has been built by the Office of Research and Development at the National Energy Technology Laboratory (NETL) to explore both synergies and technical issues associated with integrated hybrid systems. The facility is part of the Hybrid Performance (Hyper) project, and is made available for public research collaboration with universities, industry, and other research institutions. The Hyper facility is capable of simulating high temperature fuel cell systems from 300 kW to 700 kW coupled with a 120 kW turbine. The purpose of the Hyper project is to specifically address this higher risk research by combining the flexibility of numerical simulation with the accuracy of experimental hardware.