

## **Simulation Based Engineering and Science Topical Conference Overview**

Simulation Based Engineering and Science, (SBE&S), the combination of networked information, high fidelity simulation and large data set science, has created a disruptive juncture for Chemical Engineering and the CPI. For industry, SBE&S is an engine for economic growth and competitiveness. It is the critical new asset in Smart Process Manufacturing that will enable next generation innovation, design, resource management, sustainability, resiliency and management of the full design-to=delivery product life cycle. Is it also the critical new capability for scientific discovery in product innovation and innovative manufacturing. Many future technologies cannot be understood, developed, or applied without SBE&S. Through invited speakers and an executive level workshop format, this Topical addressed SBE&S in this disruptive context, how it is revolutionizing science and engineering, and how Chemical Engineering and the Institute can respond.

Papers presented at three sessions at the AIChE Annual Meeting in Salt Lake City (November, 2010) covered the following areas:

**High Fidelity Simulation and Large Database Studies of Micro, Macro, and Multi-Scale Phenomena:** The role of simulation and large database studies in innovation, shortened product to production lifecycles, high fidelity prediction, scenario based planning in operations, real time business to operations planning, supply chain optimization.

**The Application of Simulation Based Engineering and Science to Industrial Operations and Engineering Management of Enterprise Process Systems:** Information technology, simulation, networked information and data sharing for Smart Process Manufacturing – operational resiliency, transition management, EH&S performance, energy and sustainability performance and economic competitiveness.

**National Investment, Policy Education in Simulation-Based Engineering and Science:** The implications of SBE&S for science and industry including key technological and applied capabilities and the impacts on the workforce, education, national investment, policy and the role of AIChE.