CACHE's NSF Award on Sustainable Manufacturing Advances in Research and Technology (SMART) Coordination

U.S. Manufacturing, a key component of national economic development and prosperity, has been greatly challenged by competitive trends over the past decade, since global manufacturing competition has begun to shift towards fast implementation, just-in-time model-based manufacturing, frequent product transitions, and advanced training of technical personnel to meet those changing needs. Further burdens are placed on the industries owing to uncertain energy prices and possible greenhouse gas constraints. Today, how to revitalize the U.S. manufacturing is of utmost importance in the nation.

To bridge the gap between the academic knowledge discovery and industrial technology innovation for manufacturing sustainability, CACHE organized a multidisciplinary team to develop an NSF proposal, entitled *Sustainable Manufacturing Advances in Research and Technology Coordination Network (SMART CN)*, in 2011. Late last year, the NSF made a news release on the sustainability research and education coordination awards, including the SMART CN award (http://www.nsf.gov/news/news_summ.jsp?cntn_id=122028). This is a five-year project, starting on Jan. 1, 2012.

The project is led by Yinlun Huang (Wayne State U.), Thomas Edgar (U. of Texas), Mahmoud El-Halwagi (Texas A&M U.), Cliff Davidson (Syracuse U.), and Mario Eden (Auburn U.). The steering committee of the project includes Luke Achenie (Virginia Tech.), David Allen (U. Texas), Burton English (U. Tennessee), David Fasenfest (Wayne State U.), Ignacio Grossmann (Carnegie Mellon U.), Karen High (Oklahoma State U.), Ibrahim Jawahir (U. Kentucky), Christos Maravelias (U. Wisconsin), Kim Ogden (U. Arizona), Mary Rezac (Kansas State U.), and Farhang Shadman (U. Arizona). The team collaborates with 11 national organizations and university centers as well as eight foreign universities in Europe (Denmark, Germany, and Norway) and Asia (China, India, Japan, and Singapore).

In this project, the multidisciplinary team will (1) conduct comprehensive and in-depth review of the frontier research and technological development for sustainable manufacturing, (2) define the roadmap towards manufacturing sustainability and identify the bottlenecks in a number of focused research areas via several workshops, (3) coordinate the research through sharing knowledge, resources, software, and results, establish partnerships with industrial groups to expedite technology introduction, and (4) conduct education and outreach to a wide range of stakeholders. The SMART CN will support new paradigms for manufacturing sustainability and aggregate concerted efforts from multiple research groups with complementary expertise to transform the knowledge base of manufacturing sustainability. It is anticipated that success in the endeavor will make a significant impact on the industrial efforts in developing sustainable manufacturing technologies.

In early May, the SMART CN team organized the first steering committee meeting in Dallas, during which the team discussed project tasks, coordination strategies, planning for the first roadmap-focused workshop in 2013. As the 2012 AIChE Annual Meeting is coming soon, the team will take the opportunity to organize a more broadly attended workshop on sustainable manufacturing research and education coordination. A number of AIChE officers, academic scholars and industrial leaders, as well as foreign collaborators will be invited. The workshop agenda will be available on the project website: http://www.research.che.utexas.edu/susman/about.html.