



Collaborative industry-academia relationships spark innovations

Energy and materials were the focus of the first in a series of Industry-Academia Collaborative Workshops sponsored by Louisiana EPSCoR and the Board of Regents. Keynote speakers were John Bartos, Vice President of Development and Technology of Cameron International, and Louisiana Economic Development Secretary Stephen Moret.

Guest academia speaker Leslie Guice, Vice President for Research and Development at Louisiana Tech University, described Louisiana's Science & Technology Plan and the direct ties to economic development. Representing Louisiana industry, John Bartos spoke about leveraging the power of universities in pursuit of new technology. Secretary Moret presented the top growth initiatives for Louisiana and their connections to higher education.

Two workshop panels convened to provide open discussions regarding industry research needs and the mechanisms in place to collaborate with universities. Also discussed were relevant issues on intellectual property. Participants discussed how to facilitate policies and mechanisms that will help seize innovative opportunities and reap the benefits of research in Louisiana. Panelists included: John Parks, Albemarle; Reiner Kuhr, The Shaw Group; Darrel Zweigle, ExxonMobil; Ben Russo, Cleco Power; Tom Yura, BASF; Richard Kordal, LA Tech; Peter Kelleher, LSU. The closing remarks were provided by Kevin Carman, Dean of the LSU College of Science.

To facilitate additional industry-academia interchanges, Louisiana's leading energy and materials researchers provided poster presentations of their research programs and innovations that could



John C. Bartos, Vice President of Development and Technology for Cameron International

support industry needs. This created a unique face-to-face matchmaking situation for researchers and industry representatives looking to identify possible future collaboration opportunities.

Dr. Michael Khonsari, project director of Louisiana's EPSCoR program and Associate Commissioner for Sponsored Programs at the Louisiana Board of Regents, opened the workshop by announcing the NSF EPSCoR \$20 million Research Infrastructure Improvement Award and the establishment of LA-SiGMA, Louisiana's materials science research alliance.

Mr. Bartos' keynote presentation focused on how critical materials research is to maintaining Cameron International's established leadership in the development of innovative flow equipment for the oil, gas and process industries.

"This is a topic that I am quite passionate about – leveraging the power of universities to assist us in our pursuit of new technology," stated Bartos.

He described how the future of the oil and gas industry lies in ultra cold drilling of Arctic reserves where an estimated 25 percent of the world's undiscovered oil and gas natural resources exist. The Arctic is perhaps the harshest territory on Earth and presents unique problems that Cameron International would like to resolve by collaborating with university researchers.

"There is one technical limitation to what enables us to drill up there: finding a simple elastomer that can survive in those cold temperatures."

Engineers at Cameron International have done extensive work with elastomers and designed dual elastomer composites and very

sophisticated geometries that can survive temperatures as low as +20 °F. However, in the harsh Arctic environment, the elastomers are required to function in a temperature range of -50 to +350 °F. "There is no elastomer on earth that can do that, that we know of."

To solve this problem, Cameron International has entered the world of nanotechnology. Researchers are adding carbon nanotubes to hydrogenated nitrile butadiene rubber and nylon to augment the characteristics of the elastomers in a way that could extend their functional range.

Researchers are also actively working with Cameron International to reduce the extremely hazardous environmental and safety exposures of rig workers who hang and maintain

the massive web of cables below the rig decks. Currently, the transmission of critical electrical, hydraulic and acoustic information is sent from the surface down to the equipment on the ocean floor and back by means of separate networks of cables and sensors.

"If we can combine all of those operations with functional convergence into a single structural element, we can solve a lot of the industry's problems," said Bartos.

Cameron International participates in a number of programs with universities in a variety of capacities, including mentoring students, sponsoring research programs, developing collaborations and building research laboratories. "We are able to tap into technologies that we really couldn't research on our

own. We don't have the opportunity to go into things like nanotechnology and smart technologies. Our focus is on new products, not discovering new technologies, whereas that is the business of the universities and it gives us the opportunities to tap into those resources."

"BASF utilizes a whole spectrum of university research, from specific to very broad-range subjects. We leverage consortiums, particularly for surface materials, because they bring together companies and academic experts to solve problems together."

Tom Yura, Senior Vice President and General Manager, Geismar Site of BASF Corporation

"We are a global manufacturer of highly engineered specialty chemicals and use university research a lot of different ways, from very simple tasks, like doing analytical work for particular products, to working with spin-off companies to see if they have technology that we could use to increase our technologies."

John Parks, Research and Development Director of Albemarle Corporation



Industry panel session moderated by Connie Fabre, Executive Director of the Greater Baton Rouge Industry Alliance and Louisiana EPSCoR Committee Member.