

Center for Particulate and Surfactant Systems

An NSF Industry/University Cooperative Research Center (I/UCRC) since 2008



Spring 2013 Industrial Advisory Board (IAB) Meeting

February 12-14, 2013

University of Florida, Gainesville, FL

~ Meeting Highlights and Minutes ~

The CPaSS Spring 2013 IAB Meeting took place in the J. Wayne Reitz Union at the University of Florida in Gainesville, FL, on February 12-14, 2013. The three-day program consisted of technical presentations, affiliated & supplemental project updates, an interactive research project ideas discussion, industry feedback and a poster session.

Below are the Main Outcome Highlights of the meeting

The Center leadership would appreciate any comments, corrections, questions, or suggestions you may have regarding any of these items

NSF I/UCRC Phase II Renewal Proposal

- The Center is now planning to submit the Phase II renewal proposal to NSF by the September 27, 2013, deadline
- CPaSS NSF Evaluators will be interviewing a select group of representatives from the IAB regarding Center research affecting product or process improvements (realized or anticipated) at their respective companies
- Though not required, NSF encouraged the Center leadership to include short testimonials from IAB Members supporting the Phase II renewal

International Partner Site

- The UF site was awarded an international partner site supplement for the Shah-Schulman Centre for Surface Science and Nanotechnology at Dharmsinh Desai University (DDU) in Nadia, Gujarat, India
- The kickoff IAB Meeting for the DDU site is scheduled for March 6-7, 2013

Value Added Opportunities Guide

- The Strategic Planning Committee (SPC) presented and distributed the latest version of the Center Value Added Opportunities Guide

Interactive Research Project Ideas Discussion

- Industry representatives and Center faculty, researchers and students participated in an interactive discussion session to brainstorm sector specific precompetitive research project ideas
- The list of project ideas from this session is attached to the meeting minutes

Fall 2013 IAB Meeting (see <http://iucrc.perc.ufl.edu/> for additional meeting details)

- August 14-15, 2013, at Columbia University, New York, NY

For specific information on these meeting items, please refer to the attached meeting minutes.

Welcome Reception

Mr. Erik Sander, Director, Engineering Innovation Institute, University of Florida

Spotlight: Erik led a discussion on innovation and leadership from the perspective of 'nature' vs. nurture'

Erik gave a presentation about innovation and leadership, and how these programs are being integrated into the engineering curriculum at the University of Florida. He then led a discussion amongst the IAB Members and Center personnel on whether being innovative and a leader were inherent or acquired abilities.

Welcome & Introduction

Dr. Cammy R. Abernathy, Dean, College of Engineering, University of Florida

Spotlight: Cammy highlighted the need for promoting industrial collaborations with universities to the federal government

Cammy welcomed all the meeting attendees to the University of Florida and thanked the industry members for their time, talent and contributions to the Center and University. She described many of the ongoing interdisciplinary and educational efforts at the College of Engineering, particularly those related to industry collaborations. She also mentioned that increased support for collaborative industrial research could be promoted by IAB Members through connecting with their local government representatives and highlighting the benefits of such collaborations.

NSF I/UCRC Program Update

Dr. Larry Hornak, I/UCRC Program Director, NSF

Spotlight: Larry outlined the steps CPaSS needed to take in planning for a successful Phase II renewal

Larry presented an overview of the I/UCRC Program at NSF, including the role of the program within the Directorate of Engineering. In detailing the organizational structure within the I/UCRC Program as well as the values of the I/UCRC model and the role NSF plays in the program, he also highlighted various Supplemental Programs available to CPaSS such as the Fundamental Research (FRP), Small Business Innovation Research (SBIR) Grantees, and Collaborative Opportunity for Research Between I/UCRCs (CORBI) Programs. Larry pointed out CPaSS' Phase I value proposition and strategies (conveying Center value and industry sector impact) for heading into Phase II renewal.

CPaSS Sites - Status & Update

Dr. Brij M. Moudgil & Dr. P. Somasundaran, CPaSS Directors

Spotlight: The primary focus of the CPaSS leadership for the coming summer will be the preparation and submission of the five-year renewal proposal to NSF in September

Brij began the CPaSS update by highlighting what the Center leadership would like to accomplish at the meeting as well as what components are needed for the renewal proposal to NSF which will be submitted this September. Brij then presented an updated overview of the Center (facilities, research expertise, etc.) and the most recent outcomes, enhancements and initiatives, including the additional of Dharmasinh Desai University as a new international partner site. He also detailed the UF site project portfolio. Som continued the presentation by summarizing the research efforts at the CU site, including the greenness index initiative with the greening mining program, which is scheduled to meet at the Society for Mining, Metallurgy & Exploration (SME) Meeting in Colorado.

CPaSS Added Value Opportunities Guide

Dr. Greg Spontak (P&G, Ret.), CPaSS IAB Executive Committee Vice Chair

Spotlight: The Strategic Planning Committee has created a guide for identifying value added opportunities originating from interactions and collaborations with the Center

Greg presented the motivation behind the creation of the value added opportunities guide from a management communication standpoint, then went through each section detailing the types of applicable items.

Project Updates, New Initiatives and Poster Session

Morning Technical Sessions moderated by Dr. Greg Spontak (P&G, Ret.) and Dr. D. R. "Naga" Nagaraj (Cytec Industries)

Afternoon Technical Session moderated by Dr. Brij M. Moudgil (CPaSS Director) and Dr. Raymond Farinato (Cytec Industries)

Projects were each presented for ten minutes followed by questions/discussion and completion of the LIFE forms by the industry members.

Poster Session

CPaSS Researchers and Industry Members

Electronic copies of the posters will be made available on the CPaSS website (<http://iucrc.perc.ufl.edu/>) in the Members Area.

IAB Executive Meeting (Closed-Door ~ IAB Members Only)

Chaired by Dr. Greg Spontak (P&G, Ret.), IAB Executive Committee Vice Chair

Moderated by Dr. Brij M. Moudgil & Dr. P. Somasundaran, CPaSS Directors

Attendees

- Brij M. Moudgil (CPaSS Director)
- P. Somasundaran (CPaSS Co-Director)
- Rodney Guico (CPaSS UF Site Director)
- Kevin Powers (CPaSS Faculty)
- Hassan El-Shall (CPaSS Faculty)
- Akshay Rajopadhye (CPaSS Student)
- Greg Spontak (IAB Executive Committee Vice Chair)
- Reg Davies (CPaSS Consultant)
- Larry Hornak (NSF)
- Vida Scarpello (NSF)
- Sam Adamy (Church & Dwight Co., Inc.)
- Vipul Bansal (IMERYS)
- Catrin Becker (Evonik)
- Ron Doles (Nalco)
- Ray Farinato (Cytec Industries)
- Steve Giles (Shell)
- Chuck Hodge (ECOLAB Inc.)
- Vic Jackson (Material Flow Solutions)
- Brajesh Jha (Evonik)
- Jorge Lopez (SUMICOL S.A.)
- Pat Macy (Kemira)
- Altony Miralles (ECOLAB Inc.)
- D. R. "Naga" Nagaraj (Cytec Industries)
- Diana Ortega (SUMICOL S.A.)
- Julius Regalado (G4-Synergetics)
- Monique Roerdink Lander (ECOLAB Inc.)
- Guenter Stroh (Evonik)
- Vish Subramaniam (Shell)
- Teleconference: K. P. Ananth (Unilever)
- Teleconference: Pete He (Dial-Henkel)

Greg called the meeting to order at 8:35 A.M.

NSF I/UCRC Phase II Renewal Proposal

Spotlight: The NSF Evaluators are soliciting IAB Members for conducting an economic impact analysis interview as part of the Phase II renewal testimonials

- Dr. Denis Gray will be contacting (via phone and email) those IAB Members who volunteered
- IAB Members will have the option of skipping certain questions
- In addition to the impact analysis, the Center renewal proposal should also include paragraphs from other IAB Members stating how they've generally benefited from Center membership, i.e., cost savings, hired students, etc. - companies should state how good the students are/were and how much hiring the student has 'saved' the company
- Larry noted that highlighting dwell time (long-time member, indicating consistent benefits from the Center) would be good in the proposal

Interactive Session - Breakout Groups for Sector Specific Precompetitive Research Project Ideas

Spotlight: Industry representatives and Center faculty, researchers and students were split into industry sector specific groups and were tasked with determining two or three precompetitive research project ideas

- List of project ideas are attached to the meeting minutes
- The session was generally well-received by the industry members
- Ray and Pat noted that follow up to this session is key - the directors/faculty should be looking at the list and prioritizing the projects to (quickly) move forward by the next IAB meeting
- Greg and Naga described a timeline that allows the raw project list to be shared now with a more focused/specific list coming out by the summer
- Steve and Altony noted that more interaction is needed between the IAB meetings, perhaps even a monthly teleconference
- Pete and Monique described how they go about sharing information and ideas gleaned from the IAB meetings to their co-workers and other departments, both to brainstorm new projects as well as justify to center membership - Naga also suggested having a teleconference IAB meeting for other team members at each company
- Along the lines of industry needs, Ray also suggested that a IAB database of expertise might be of use to students and researchers at the Center - Cytec has such a template which can be shared with CPaSS
- Greg talked about the goals the university researchers should keep ahead of them - he also suggested that they should think about the deliverables for their projects and the approach to achieve the set targets
- Catrin requested that all the posters presented at the meeting be posted online to be viewed by IAB members (Members Area of the CPaSS website)

Welcome Reception Presentation & Discussion

Spotlight: Those attending the reception participated in a discussion on innovation and leadership from the perspective of 'nature' vs. nurture'

- Altony and Monique felt that it was a good discussion with lots of interaction, though next time a topic with a more definitive answer would lead to a better conclusion
- Brij mentioned that the non-technical motivation for the discussion was to involve all levels of the Center
- Based on the skills matrix presented by Erik, a suggestion was made that the IAB Members detail specific skill sets which they would like to see in their prospective employees and, with the help of faculty researchers, start developing these skills with the students
- Vipul noted that it can be beneficial to both the IAB Members and the students to get the students involved in the regular discussions/meetings and sharing the expectations of the IAB Members so that the students get a clearer perspective about the expectations and directions of the project
- Vida and Larry commented that a basis for this type of discussion would be: what is the "ideal student" to the IAB/what is the ultimate recommendation letter?
- Greg suggested that the IAB Members give more input on the next discussion topic

Value Added Opportunities Guide

Spotlight: The value added opportunities guide is still a work in progress, and IAB Members are welcomed to give any additional feedback

- Greg asked the IAB Members for any additional comments or feedback regarding the guide
- Brij added that most of the guide originated from the suggestions of the SPC Members, but the Center leadership and SPC would welcome any other additions or changes
- Greg mentioned he has asked Erik to give the Innovation and Leadership presentation to P&G

Membership Recruitment

Spotlight: Retaining and recruiting companies in these times is tough, but can be accomplished through funding opportunities, face-to-face interactions and targeting company-specific projects

- The issue of membership recruitment and retainment was discussed, particularly with regard to raising membership fees in these challenging economic times
- It was pointed out that double memberships are possible, and would result in double the voting power on CPaSS projects
- Larry added that some I/UCRCs scale access to facilities when staggering benefits of single/double memberships
- Ananth and Larry discussed if there was any difference between enhancement projects and double memberships - membership fees are pooled and governed by the terms of the membership agreement while enhancement is putting more money (if into the pool of membership fees, then results are shared), but it could be considered like a double membership
- Larry also noted that under the new NSF solicitation, only one double membership is allowed per company, but enhancement funds beyond that is fine
- This differs from leveraged/sponsored projects, which are governed under separate terms from the I/UCRC
- Greg summarized the funding opportunities - membership fees give access to shared projects; enhancements are in addition to shared projects; and leveraged projects belong to the company and are not shared
- Som noted that results from enhancement projects get shared, but only generally - details are not specified
- Larry pointed out that the supplemental CORBI program provides a good opportunity to double a project's industry dollars, since these projects usually come from system-level ideas and involve whole industry sectors
- Brij then asked the IAB Members how we can better go about bringing in new companies
- Larry suggested using supplemental funding opportunities to bring in a set/retain a set of companies within an industry sector
- Greg pointed out the importance of researching target companies for their products and requirements and preparing a value proposal addressing how the Center can help these companies reach their goals by any value addition - he also suggested developing a matrix of potential target companies based on geography and research requirements
- Vida recommended that IAB Members accompany directors when they visit companies for recruitment
- Vish suggested searching for related patents, as the research direction as well as contact name can be gleaned from the patent information
- Chuck and Brajesh also suggested meetings and trade shows - AIChE and the Society of Cosmetics
- Som and Brij acknowledged that a booth would be too costly, but Pat and Larry suggested that the directors go directly to the booths of the companies, perhaps even when they're setting up and can give more time and attention
- Steve said it might be a good idea to share a list of companies CPaSS is targeting with the IAB so maybe they can give a contact name
- Reg suggested that that the SPC lead the effort to address specific issues and how to recruit specific target companies

Current Projects Discussion

- Vida led a discussion regarding comments, questions and suggestions on the LIFE forms for each of the projects presented at the meeting.

Future Meeting Dates

- The Fall 2013 IAB Meeting is scheduled for **August 14-15, 2013**, at Columbia University in New York, NY

Meeting Was Adjourned At 11:30 A.M.

- Minutes as recorded by Akshay Rajopadhye, Rodney Guico, and Brij M. Moudgil/P. Somasundaran

Interactive Session - Break Groups: Sector Specific Precompetitive Research Project Ideas for Phase II Center Renewal

Group Leader - Pat Macy (Kemira)

Improved Environment:

- Tailings management: maintaining improved level of ultrafine particles ($<2\mu$) in concentrated suspensions
- Air quality: Removal of particulates from emission & cost effectiveness
- Water quality: removal of TDS, from micro/nano dispersions & cost effectiveness

Improved Processing:

- Heavy Oil emulsion formations and breaking: knowledge base development
- Nanoparticle dispersion ($<0.1\mu$)

Group Leader - D. R. "Naga" Nagaraj (Cytec Industries)

- Study/modeling of surfactant/polymer behavior in hostile (high solids) environment
- Particle stabilization/flocculation: realistic approach towards multiphase systems considering uncaptured solid particles
- Prediction of skin toxicity of surfactant blends which otherwise might be benign
- Development of greener cationic surfactants
- Design/concept of human body mimicking membranes (e.g. liver/bladder)
- Characterization of nanoparticles (what application?)
- Polymer/surfactant interactions at oil/water interface
- Modeling/characterization of foams/froths carrying particulates
- Highly concentrated dispersions with wide PSD, multiphase/composition/drug dispersions and their rheological study
- Dispersion stability in non-aqueous media, study of surfactant behavior at oil/water/dirt interface
- Characterization/modeling of deposition of contaminants on membranes
- Catalytically active compounds on inert/inexpensive materials
- Microsphere dispersions in thermal insulating coatings

Group Leader - Altony Miralles (ECOLAB Inc.)

- Surface cleaning by water jet spray: measuring particle size in dynamic way

Simulation/modeling of particle processes:

- Dispersion/filtration/cake formation properties: role of zeta potential
- Using surfactants to break the crystal formation in oil (hydrates formation)
- Developing a software for agglomeration/flocculation tools
- Processing of hygroscopic materials

Group Leader - Reg Davies (CPaSS Consultant)

- Increase in fabric repellency: revolutionizing the laundry system, efficient water usage. Drying etc.
- Uniform properties of high solid content slurries by achieving monodisperse systems
- Modifying powder handling systems: wet system vs. dry systems, powder flowability
- Economic CMP, slurry characterization
- Leveraging surfactants in battery systems, improvement in battery performance using surfactants
- Surfactants as reactions catalysts, photo activation