

# 4<sup>TH</sup> CERAMIC LEADERSHIP SUMMIT

APRIL 7–9, 2014 | BALTIMORE, MD

[www.ceramics.org/cls2014](http://www.ceramics.org/cls2014)



## Wrap up Session: Moderators Panel

Wednesday, April 9, 2014

3 – 4 p.m.



David W. Johnson Jr.



Lora Cooper Rothen



Christine E. Heckle



Richard Weber

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## Wrap up Session: Moderators Panel

### Major Ceramic Leadership Summit Themes

- Business Climate Overview and Sustainability – David Johnson
- Innovation – Christine Heckle
- Manufacturing – Lora Cooper Rothen
- Workforce Development – Richard Weber

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## Wrap up Session: General Sessions

### David Johnson

- Business Climate Overview
  - Perspectives on Manufacturing, James Meil, Eaton Corporation
  - Technology Trends, Katharine Frase, IBM Corporation
- Sustainability – Frank O'Brien-Bernini, Owens Corning
- Additive Manufacturing – Steve Rengers, GE Aviation
- 3D Printing – John Balistreri, Bowling Green State University

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## **Business Climate Overview Perspectives on Manufacturing James Meil, Eaton Corporation**

- The US is emerging with a renaissance in manufacturing where the US has an advantage
  - Superior management practices
  - Deep capital and high labor productivity
  - R&D intensity and technology leadership
- Do what you can, exit where you cannot
- US university system is an advantage
- The outlook for the economy in 2014 to 2015 is OK, perhaps a B- or C+

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## **Business Climate Overview**

### **Technology Trends**

### **Katharine Frase, IBM Corporation**

- We are in an era of Big Data
  - It is being generated at an exponentially increasing rate
  - Mobile devices are largely responsible
- Data uncertainty is rising
- Yet decisions are being made with poor or unreliable data
- We are just beyond the threshold of cognitive systems in computing



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## Sustainability

### Frank O'Brien-Bernini, Owens Corning

- Sustainability – Meeting the needs of the present without compromising the world we leave to the future
- Must be done in the context of trends such as:
  - Population growth
  - Climate change
  - Water and energy shortages
- Involves:
  - Operations
  - Supply Chain
  - Product Declarations for customers
  - Employee health and safety

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## Additive Manufacturing Steve Rengers, GE Aviation

- Many processes using metals, ceramics and plastics
- Advantages
  - Design freedom (often unique designs)
  - Time savings, particularly in the prototype market
  - Cost savings (avoid tooling costs)
  - Quality improvement (avoid brazing and better microstructure)
- Market trends
  - Fast growth (\$2.2B in 2012, up 28.6% over 2011)
  - Flurry of mergers and acquisitions
  - IP boom
- Future bringing bigger machines, greater speed, multiple materials, lower costs
- GE using AM for improved fuel efficiency in aircraft engines while also enjoying improved durability, weight reduction and fewer parts
- Many other emerging applications in many fields

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## 3D Printing

### John Balistreri, Bowling Green State University

- A clever and entertaining dinner speaker
- Large ceramic art is a lifelong passion
- 3D printing offers him:
  - Fewer constraints with no molds
  - Shapes not otherwise possible to make
  - Recurrent images
  - Ability to reproduce architectural ceramics where the art has been lost
- 3D printing should be accepted as a tool for ceramic art
- High tech applications discussed
- Formed company named Tethon3D



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## **Wrap up Session: Innovation Theme** **Christine Heckle**

- Strategic Open Innovation – Andy Zynga, NineSigma
- Innovation Strategies – Marty Curran, Corning
- Patents – Steven M. Ritchey, Thompson Coburn
- Disruptive Innovation – Anthony Nickens, Ceramatec
- Material Sourcing – Michael Silvers, American Elements

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## Intellectual Property - Ritchey

- First inventor to disclose OR file
- Some exemptions for universities
- Still dynamic environment – Roberts court very active in patent cases
- Use network / business lawyer to find patent attorneys

## Apparent Conflicts

- Curran:
  - Find out quickly with least amount of time – should we spend \$ on this
  - Demo, listen, demo, listen, demo
- Nickens:
  - Stage Gate is 5 shots to pre-emptively kill disruptions
  - Customers don't anticipate disruptions

## Material Sourcing - Silver

- Distribution of materials on the planet is unchanging
- Countries only need to have 40% of the material in order to control the pricing in perpetuity
- Some companies trying to invent without access to RE
- Nb – one family in Brazil
- Co – >50% in Congo
- RE – China
- Li – Chile, Bolivia, Argentina
- W – China

Proposal: Innovation Materials Treaty – include all sovereign monopolies so that they have assurance of business vs. the “Innovation Distortion”

## Problem Definition

- Zynga: Define the problem correctly
- Curran: Find the mistake in your assumptions

## 6 P's

People, Pesos, Passion, Persistence  
Patience, Partnership, (Culture)

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## **Wrap up Session: Manufacturing Theme** **Lora Cooper Rothen**

- Manufacturing in U.S. – Al Lubrano, Materion & NAM
- Global Manufacturing Panel – Daniel Tipsord, Trans-Tech, Inc., Bud Cass, Bud Cass Consulting
- Resurgence of Manufacturing – Petra Mitchell

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## Wrap up Session: Workforce Theme

### Richard Weber

- Engineering Talent Panel Discussion – Eric Urruti, Wayne Butscher, Allen Kimmel, Lora Cooper Rothen
  - Replacing “middle skills” in an aging workforce is an existential problem in CG industry
  - Apprenticeships are being successfully used to develop special skills in house
  - Tailored community college courses and OJT can be combined to broaden skillsets
  - These programs require **EXCELLENT COMMUNICATION** between all parties at all levels

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## Wrap up Session: Workforce Theme

- ***Public – Private Partnerships To Build a Competitive Workforce – Richard Norment***
  - A PPP is a contract - both sides provide resources and gain from the partnership
  - “7 keys to success” – **1. Public Sector Champion, 2. Statutory Environment, 3. Organized Structure, 4. Detailed Business Plan, 5. Defined Revenue Stream, 6. Stakeholder Support, 7. Pick Your Partner Carefully!**
  - Examples Chattanooga/VW apprenticeship program, and North Carolina community college training collaboration
  - Build an ongoing/sustained working relationship between partners



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## Wrap up Session: Workforce Theme

- ***A New Role for The American Ceramic Society: Educating Engineers Before and After that First Job – Richard Brow***
  - Tailoring and evolving university courses to meet changing needs in the CG industry
  - MSE is grad-centric; how does this affect training of BS engineers for manufacturing?
  - Providing follow on training and continued development of staff skills
  - Developing closer links between trainers and employers
  - The CGIF will help to recruit and develop keen new talent in the CG industry