

# North Carolina A&T State University

## Greensboro, NC

March 12 – 14, 2008

### PROGRAM

#### Wednesday, March 12, 2008

5:30 pm – 8:00 pm

**Workshop Registration (at Proximity Hotel)**

7:00 pm – 8:00 pm

**Reception (at Proximity Hotel): (Sponsored by Pratt Whitney)**

Welcome by Janice Brewington, Provost and Vice Chancellor for Academic Affairs, North Carolina A&T State University

#### Thursday, March 13, 2008

7:30 am – 8:00 am

**Continental breakfast (Lecture Room 1 in McNair)**

8:00 am – 8:10 am

Welcome by Stanley Battle (McNair Auditorium): Introduced by N. Radhakrishnan, Vice Chancellor for Research & Economic Development, North Carolina A&T State University

8:10 am – 8:20 am

**Introductory Remarks:** Mary Juhas, Program Director for Diversity & Outreach, National Science Foundation

8:20 am – 8:45 am

**Plenary session: Look Ahead from Leaders – Engineering Research-2020**

Kristina Johnson, Provost, Johns Hopkins University (McNair Auditorium): Introduced by Joseph Monroe, Dean, College of Engineering, North Carolina A&T State University

8:45 am – 10:30 am

(\* NSF Division Directors will present overview of their respective divisions)

**Advanced Materials & Nanotechnology I (McNair Auditorium)**

**Sensors (Graham 210)**

**Transportation & Healthcare (Graham 208)**

8:45 AM Kesh Narayanan\*, Division Director – Industrial Innovation and Partnerships of Illinois – Urbana-Champaign

9:05 AM Placid Ferreira, University of Illinois – Urbana-Champaign

9:20 AM Prashant Kumta and William Wagner, University of Pittsburgh

9:35 AM Nina Orlovskaya, University of Central Florida

9:50 AM Steve Pennycook, ORNL

10:05 AM V. Shanov, University of Cincinnati

10:20 AM Benjamin Harrison, Wake Forest University

8:45 AM Usha Varshney\*, Division Director, Electrical, Communications, and Cyber Systems, NSF

9:05 AM Marwan Bikdash, NC A&T State University

9:17 AM Christian Poellabauer, University of Notre Dame

9:29 AM L. Xiao, Michigan State University

9:41 AM Alvin, S. Lim, Auburn University

9:53 AM Babak Ziaie, Purdue University

10:05 AM Junseok Chae, Arizona State University

10:18 AM Richard Conners, Virginia Tech

8:45 AM Sohi Rastegar\* (NSF – Office of Emerging Frontiers in Research and Innovation)

9:05 AM Wanpracha Art Chaovaitwongse, Rutgers University

9:20 AM Julie Ivy, NC State

9:35 AM Sarah Root, University of Arkansas

9:50 AM Pablo Durango-Cohen, Northwestern University

10:05 AM Erin Santini Bell, University of New Hampshire

10:20 AM Xuesong Zhou, University of Utah

10:30 - 10:40 am

**Break (Sponsored by Xerox Corporation)**

10:40 am – 12:25 pm

(\* NSF Division Directors will present overview of their respective divisions)

**Advanced Materials & Nanotechnology II (McNair Auditorium)**

10:40 AM Joycelyn Harrison\* (NSF-Civil, Mechanical, and Manufacturing Innovation) S. Mall, Air Force Institute of Technology

11:00 AM Dan Davis, Texas A&M University

11:30 AM Uday Vaidya, University of

11:45 AM Charles Browning, University of Dayton

12:00 AM John Whitcomb, Texas A&M University

12:15 PM David Ford, University of Massachusetts at Amherst

**Energy & Environment (Graham 210)**

10:40 AM Judy Raper\* (NSF - Chemical, Bioengineering, Environmental, and Transport Systems)

11:00 AM Timothy Donahue, University of Wisconsin

11:15 AM Willie Harper\*, Auburn University

11:30 AM Helen Hsu-Kim, Duke University

11:45 AM Maya Trotz, University of Florida



12:00 Fred Cannon, Penn State  
Noon  
12:15 Foster Agblevor, Virginia Tech  
PM

**Modeling & Simulation (Graham 208)**

10:40 AM Allen Soyster\* (NSF – Engineering Education and Centers)

**12:30 pm – 1:30 pm**

**1:30 pm – 2:30 pm**

**Advanced Materials & Nanotechnology I**

Y.S. Lee, NC State University  
Qiuming Wei, UNC – Charlotte  
Sriram Singh, Alabama State University

**Advanced Materials & Nanotechnology II**

Tamma Kumar, University of Minnesota  
Mahesh Hosur, Tuskegee University  
Richard A. Wysk, Penn State University  
Ibrahim Tansel, Florida International University

**1:30 pm – 2:30 pm**

**2:30 pm – 2:50 pm**

**2:55 pm – 3:40 pm**

**3:40 pm – 3:50 pm**

**3:50 pm – 4:35 pm**

11:00 AM Sila Çetinkaya, Texas A&M University

11:13 AM Pinar Keskinocak, Georgia Tech

11:26 AM Cole Smith, University of Florida

11:39 AM Bharat Soni, University of Alabama at Birmingham

11:52 AM Jane Wang, Northwestern University

AM University

12:05 PM Doug Thain, University of Notre Dame

12:18 PM Krishnan Mahesh, University of Minnesota

**Lunch (in Cafeteria) (Sponsored by Northrup Grumman)**

**Speaker: Chineta Davis, Vice President of Material Program Management Operations, Northrup Grumman**

**Poster session (IRC)**

**Sensors**

V. Jagasivamani, Hampton University  
Michael Roan, Virginia Tech  
Mohan Trivedi, University of California at San Diego  
Surendar Chandra, University of Notre Dame  
Pamela Abshire, University of Maryland

**Transportation & Healthcare**

Nan Kong, Purdue University  
Duraikannan Sundaramoorthi, University of Missouri-Rolla  
Younho Seong, NC A&T State University

**Energy & Environment**

Robert Powell, NC A&T State University  
Abolghasem Shahbazi, NC A&T State University  
Stephanie Luster-Teasley, NC A&T State University

**Modeling & Simulation**

Reha Uzsoy, NC State  
Burak Ozdoganlar, Carnegie Mellon University  
Paul Stanfield, NC A&T State University

**Tour of facilities A&T, and virtual tour of facilities at other HBCU/MIs (IRC)**

**Plenary Session II: Look Ahead from Leaders - Engineering Research 2020:**  
Priscilla Nelson, Provost, New Jersey Institute of Technology (McNair Auditorium): Introduced by Sanjiv Sarin, Associate Dean, College of Engineering, North Carolina A&T State University

**Panel Discussion on “Engineering Research Landscape at Historically Black Universities and Minority Institutions” (McNair Auditorium)**

**Moderators:**

Leonard Uitenham, Chair, Department of Mechanical & Industrial Engineering, North Carolina A&T State University  
Ben Wang, Vice President for Research, FAMU-FSU College of Engineering

**Panelists:**

Shaik Jeelani, Tuskegee University  
Steven Castillo, Dean, New Mexico State University  
Samuel Awoniyi, FAMU-FSU College of Engineering  
Clay Gloster, Howard University  
Shield B. Lin, Interim Associate Dean, Prairie View A&M University  
Habib P. Mohamadian, Southern University  
V. Trent Montgomery, Alabama A&M University

**Break (Sponsored by Xerox Corporation)**

**Panel Discussion on “Industry-University Engineering Research Partnerships 2020 - Potential and Challenges” (McNair Auditorium)**

**Moderators:**

Paul Stanfield, Chair, Department of Industrial & Systems Engineering, North Carolina A&T State University  
George Reynolds, Northrup Grumman

**Panelists:**

James H. Aylor, University of Virginia  
William "Bud" Baeslack III, Ohio State University



Michael Lovell, Associate Dean for Research, University of Pittsburgh  
Manuel Peace, General Motors,  
Alan Wiechman Boeing  
Greg Shultz, Wal-Mart  
Paul Clayson, nCoat Inc.  
James E. Stike, Materials Innovation Technology

**4:35 pm – 5:20 pm**

**Panel Discussion on “Inter-university Engineering Research Partnerships 2020 - Potential and Challenges” (*McNair Auditorium*)**

Moderators:

Jagannathan Sankar, Distinguished University Professor, North Carolina A&T State University

Gregory Washington, Associate Dean for Research, Ohio State University

Panelists:

Ilesanmi Adesida, University of Illinois - Urbana Champaign

V. Ragu Balakrishnan, Associate Dean of Engineering for Research, Purdue University

Gerald D. Holder, University of Pittsburgh

Rajan Batta, Associate Dean for Graduate Education, State University of New York at Buffalo

Robert Clark, Duke University

Richard Benson, Virginia Polytechnic Institute and State University

Robert Johnson, UNC - Charlotte

**5:20 pm – 6:30**

**Adjourn**

**6:30 pm Dinner:** At Proximity Hotel (Sponsored by Lockheed-Martin) :

Speaker: Dr. Carlo Montemagno. Dean, College of Engineering, University of Cincinnati

**Friday, March 14, 2008**

**7:30 am**

**Continental breakfast (*Faculty Lounge in McNair*)**

**8:00 am**

**Plenary Session III: *Engineering Research and Education Perspectives for***

***FY09***: Richard O. Buckius, Assistant Director of the NSF Directorate for Engineering (McNair Auditorium): Introduced by Mary Juhas, Program Director for Diversity & Outreach, National Science Foundation

**8:45 am**

**Panel Discussion on “Human-Capital for Engineering Research 2020 – the K-16 Context” (*McNair Auditorium*)**

Moderators:

Devdas Pai, Associate Director, Center for Advanced Materials & Smart Structures, North Carolina A&T State University

Eyad H. Abed, Director, Institute for Systems Research, University of Maryland

Panelists:

H. Borovetz, Chair, Bioengineering, University of Pittsburgh

Eugene DeLoatch, *Morgan State University*

Jerrilee Mosier, Vice President, Workforce Development and Training

Edmonds Community College

Ralph Rogers, East Carolina University

Matthew Meyer, Director, NC BioNetwork, North Carolina Community College System

Christopher Bronson, Guilford County Schools

**9:30 am – 9:45 am**

**Break (Sponsored by Xerox Corporation)**

**9:45 am**

**Construction Plan for the “Interchanges”**: Guided Brainstorming with a moderator (nominal group technique): three breakout groups

Moderator: Sharon Hill, Sharon Hill International Inc., NC

- Engineering Research Partnerships between universities and industry (Leader: Nathan Huynh, North Carolina A&T State University) (McNair Faculty Lounge)
- Engineering Research Partnerships among universities (Leader: Salil Desai, North Carolina A&T State University) (McNair LR 1)
- Partnerships with K-14 Education in STEM disciplines (Leader: Lauren Davis, North Carolina A&T State University) (McNair LR 1)



**11:00 am**

**Summary of Group Brainstorming and Discussion (*McNair Auditorium*)**

**11:30 Noon**

**Adjourn (*McNair Faculty Lounge box lunch*)**



## Overview of Panel Discussions

**Panel:** Engineering Research Landscape at Historically Black Universities and Minority Institutions  
Research efforts at Historically Black Universities and Minority Institutions have the potential to be enhanced by collaborations with universities that have major research programs. The primary issues are: growing a focused research capability or a few capabilities at the institution, making their capabilities known to other institutions, and to sustain the collaborations with major research institutions. The panelists will address the leadership they have provided and will provide relative to the three primary issues identified.

Questions to be addressed include:

- What are the leading engineering research areas at the panelists' institutions? How did the institution enable these areas to reach their current state?
- What special efforts has the leadership at the panelists' institution taken or will take to focus your research capabilities rather than dilute scarce research resources to multiple areas?
- What specifically have the panelists' institutions done to initiate research collaborations with major research institutions?
- What successes have the panelists had in working with any other institution: majority or minority?

**Panel:** Industry-University Engineering Research Partnerships - Potential and Challenges

Collaboration among universities and corporations in specific engineering research has existed in the US for decades. More recently programs such as SBIR and NSF's I/UCRC have given further impetus to such collaborations and made both the scope of the research and the participation broader. The first category of collaboration is likely to be very focused and quick turnaround, while the second resembles basic research with the caveat that industry has interest in it. This panel will look at the opportunities and challenges for Historically Black Universities and Minority Institutions to participate in both categories of industry-university collaboration.

Questions to be addressed include:

- What successes have the panelists (both industry and university viewpoints) had in working with such a research collaboration?
- What specific issues would the university members on the panel like to bring to corporate research sponsors?
- What specific issues would the corporate members on the panel like to bring to university researchers?
- What has been the specific motivation of the corporations in initiating research collaborations with Historically Black Universities and Minority Institutions?
- Does a corporate panelist have a strategic partnership with a Historically Black University or Minority Institution? If so what is the nature of the partnership?

**Panel:** Inter-university Engineering Research Partnerships - Potential and Challenges

Research endeavors involve different ways of looking at a problem or an issue. Diverse views have the potential to enhance the outcome of research. Strategic partnerships among universities have the potential to enable such a synergy. The panelists will consider the opportunities and challenges of strategic partnerships among universities especially in the context of diversity.

Questions to be addressed include:

- What successes have the panelists had in working with any other institution: majority or minority?
- An institution must seek to understand the potential of a potential university partner before it can enter into a partnership. Are adequate mechanisms in place to understand the research capabilities of Historically Black Universities and Minority Institutions?
- What successes have the panelists had in working with Historically Black Universities and Minority Institutions?
- What has been the specific motivation of the collaborative research that the panelists have had in working with or planning to work with Historically Black Universities and Minority Institutions?



- Does the university the panelist belong to have a strategic partnership with a Historically Black University or Minority Institution? If so what is the nature of the partnership?

Panel: Human-Capital for Engineering Research – the K-16 Context

The situation with human capital for engineering research can be inferred from the following statements of Shirley Jackson, President of Rensselaer Polytechnic Institute. “Our science and engineering workforce is aging more rapidly than the supply of new talent being produced to replace it. The nation now has a minority population comprising more than 30 percent. Add young women and the “new majority” — this “underrepresented majority” emerges clearly. The current — and soon to retire — science and engineering workforce, on the other hand, is 82 percent white and more than three quarters male — not reflecting the new majority — the new reality.” The two primary issues to be addressed by the panel are: what can universities and community colleges do to spark the interest of and prepare all K-16 students for engineering research, and what can they specifically do with regard to the under-represented population.

Questions to be addressed include:

- How important is it for K-12 faculty and students to be exposed to current engineering research during their high school?
- Only a small proportion of high school students may take AP-level courses in science and math. Of these only a small proportion may pursue engineering. Will the proportion of students completing AP level science and math courses have to be increased / increased substantially to have adequate domestic human capital for engineering research?
- What can university and community college research centers do help enhance the human-capital for engineering research in the K-12 segment?
- What are university and community colleges doing to expose their students to engineering research? Is enough being done in this area?

