A National Science Foundation (NSF) Sponsored Workshop:
A US-AFRICA RESEARCH AND EDUCATION COLLABORATION

Theme: “Promoting Research and Education in Power, Information Technology, and Environment”

Ralph J. Bunche International Affairs Center
Howard University
2218 Sixth Street, NW
Washington, DC 20059

November 5 - 6, 2003

Organization Committee Members
Dr. Joe Chow (Chair), Professor, Rensselaer Polytechnic Institute
Dr. James Momoh (Co-Chair), Program Director, NSF
Victor C.W. Dzidzienyo, Associate Dean, CEACS, Howard University
Dr. Kevin Tomsovic, Professor, Washington State University
A National Science Foundation (NSF) Sponsored Workshop:  
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OVERVIEW: The US-Africa Research and Education workshop is an outgrowth of the biennial International Conference on Power System Operation and Planning (ICPSOP), which the National Science Foundation (NSF), a host of utility companies, and universities in the US and Africa have funded. Previous workshops, organized by Howard University, have led to collaboration in Faculty exchange, recruitment of students, and joint work between US professors and African colleagues.

To extend the activities and achieve the intellectual merits and broader impacts of science and engineering in the power / energy, information systems, and human and social dynamics, a research and education collaboration initiative was started by the Division of Electrical and Communications Systems (ECS) at NSF. ECS grantees serve as co-PIs with several African researchers. To kick-off the research activities, this NSF sponsored two-day workshop, under the theme “Promoting Research and Education in Power, Information Technology, and Environment”, nurtures the following objectives:

- Developing collaborative work between Mathematics professors and engineers to develop robust modeling techniques and tools for analysis of large networks.
- Building African collaboration with US researchers to build further understanding of different power system case studies.
- Establishing priorities to increase Minority in engineering and increase international cooperation.
- Promoting the NSF mission to prepare students to be globally engaged in the workforce of the 21st Century.
- Developing a roadmap for future research activities in power / energy, information systems technology, environmental and social dynamics, and education pedagogy.

IMPACTS: Each of these driving forces has implications for future power systems research and education programs in the Engineering Directorate and especially in the Division of Electrical and Communications Systems (ECS) at the National Science Foundation.

The broadening of researchers across disciplines in the areas of computational intelligence, advanced system controls, social sciences, economics and environmental sciences, and the development of new education pedagogy, curricula, and test beds for different environments will improve the contributions to the overall mission of NSF.

It is hoped that this workshop will provide information and content of high intellectual merits, serve as a catalyst for the convergence of multidisciplinary solution methodologies in science and engineering, and provide directions for advancing science and engineering collaboration between the US and Africa.

Dr. James Momoh, Program Director  
Electrical and Communications Systems Division (ECS)  
National Science Foundation  
Tel: 703 292-8339; Fax: (703) 292-9147; Email: jmomoh@nsf.gov
Wednesday, November 5, 2003

7:30 am       Bus leaves Hotel for Howard University

VENUE: Ralph J. Bunche International Affairs Center (8:00 am – 12:00 pm)
8:00 – 8:30  Coffee and Refreshments

8:30 – 9:15  Welcome and Introduction
            - Dr. James A. Momoh  
                        Program Director, NSF
            - Dr. Joe H. Chow
                        Professor, Rensselaer Polytechnic Institute

9:15 – 10:15 Keynote Speakers
            - Dr. Esin Gulari, Program Director, Division of Chemical & Transport Systems (CTS), NSF
            - Dr. Elbert L. Marsh
                        Senior Advisor to the Assistant Director for Engineering, NSF
            - Dr. James H. Johnson, Jr.
                        Dean, College of Engineering, Architecture, and Computer Sciences (CEACS), Howard University, Washington DC

10:15 – 10:30 Break

10:30 – 12:00 NSF US-Africa Sponsored Research and Education Collaboration
            - Engr. Foluseke A. Somolu
                        President, Nigerian Society of Engineers (NSE)
                        An Overview of recent US-Africa Workshop Activities
            - Dr. Chen-Ching Liu
                        Professor and Associate Dean, University of Washington, Seattle
            - Dr. Kevin Tomsovic
                        Professor, Washington State University, Pulman
            - Dr. Venkataramana Ajjarapu
                        Associate Professor, Iowa State University, Ames
            - Dr. Ganesh Kumar Venayagamoorthy
                        Assistant Professor, University of Missouri-Rolla, Missouri
            - Dr. James H. Johnson, Jr.
                        Dean, College of Engineering, Architecture, and Computer Sciences (CEACS), Howard University, Washington DC
VENUE: Howard University Blackburn Gallery Lounge (12:00 pm – 8:45 pm)

12:00 pm – 1:15 Luncheon with Guest Speaker
Mr. John Casazza, President, American Education Institute (AEI), USA
Topic: “Building Power Grid in Developing Countries”

Break Out Sessions - Research and Education Road Map

SESSION 1A
1:30 – 3:30 Research and Education Issues: Power System Planning and Development, Power System Control and Applied Mathematics Applications

Session Chair: Dr. Kevin Tomsovic Washington State University, USA
Rapporteur: Dr. Innocent Davidson Univ. of Natal, Durban, South Africa

Session Members
- Dr. George O. Anderson, University of Botswana, Gabarone, Botswana
- Dr. Karen Butler, Texas A&M, USA
- Dr. Joseph C. Ekeh, Delta State University, Ekpoma, Nigeria
- Dr. Ram Adapa, Electric Power Research Institute (EPRI), USA
- Dr. Ebenezer A. Jackson, Kwame Nkrumah Univ. of Sc. & Tech., Ghana
- Dr. John Ngundam, University of Younde, Cameroon
- Mr. Floyd Galvan, Entergy Corporation, USA
- Engr. Foluseke A. Somolu, Nigerian Society of Engineers (NSE), Nigeria
- Dr. Joe Chow, Rensselaer Polytechnic Institute, USA
- Dr. Eyad Abed, University of Maryland, USA
- Dr. Venkataramana Ajjarapu, Iowa State University, USA
- Engr. Alex Amakom, Ministry of Power & Steel (Energy), Nigeria
- Dr. Thomas C. Nwodo, Federal Univ. of Science & Technology, Owerri, Nigeria
- Dr. Chuks Erasmus Ogbuobiri, Ezak Associate Limited, Portland, USA

SESSION 1B
1:30 – 3:30 Research and Education Issues: Alternative Energy, Emerging Technologies, Environmental Issues, and Information Technology Research

Session Chair: Dr. Chen-Ching Liu University of Washington, USA

Session Members
- Dr. Philip A. Kuale, University of Benin, Nigeria
- Dr. Paul Werbos, National Science Foundation (NSF), USA
- Mr. John Chandler, President of Total Service Solutions (TSS), Inc., USA
- Dr. Musa Momoh, Usman Dan Fodio University, Nigeria
- Dr. Anil Pahwa, Kansas State University, USA
- Dr. Ganesh K. Venayagamoorthy, University of Missouri-Rolla, USA
- Dr. Pragasen Pillay, Clarkson University, Potsdam, NY, USA
- Dr. Ehile Ehouan Etienne, University of Abobo Adjame, Cote d’Ivoire
- Dr. Mani Aniebonam, George Washington University, USA
- Dr. Olorunfemi Ojo, Tennessee Technological University, USA
- Dr. Usman O. Aliyu, Abubakar Tafawa Balewa University, Nigeria
- Dr. Peter Bofah, Howard University, USA
- Dr. Raifu I. Salawu, University of Lagos, Nigeria
- Dr. Johnson A. Asumadu, Western Michigan University, USA
- Dr. Mamadou Adj, Campus Universitaire – ESP Dakar, Senegal
- Dr. Isaias Barreto da Rosa, Jean Piaget Univ., Cape Verde

3:30 – 5:15  
**NSF PANEL SESSION**

**Moderator – Dr. James A. Momoh, Program Director, Division of Electrical and Communications Systems (ECS), NSF**

- Dr. Radhakishan Baheti, *Program Director*, Division of Electrical and Communications Systems (ECS), NSF

- Dr. Elizabeth E. Lyons, *Program Director*, Office of International Science and Engineering (ISE), NSF

- Dr. Vicki B. Booker, *Program Director*, Engineering Education and Centers (EEC), NSF

- Dr. Dan Newlon, *Program Director*, Division of Social, Behavioral, and Economic Sciences (SBE), NSF

- Dr. Marvin Goldberg, *Program Director*, Division of Physics, NSF

- Dr. Marshall M. Lih, *Senior Engineering Advisor*, Bioengineering and Environmental Systems (BES), NSF

5:15 – 5:30  
Coffee Break

5:30 – 6:30  
Break-Out Session Reports

7:00 – 8:30  
Dinner, Guest Speaker

8:45 pm  
Bus leaves Howard University for Hotel
Thursday November 6, 2003

7:30 am  Bus leaves Hotel for Howard University

**VENUE: Ralph J. Bunche International Affairs Center (8:00 am – 11:00 am)**

8:00 – 8:30  Coffee Break

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### SESSION 2A

8:30 – 10:00  Research Activities of Interest for Future International Collaboration

**Session Chair:** Dr. Karen Butler  
Texas A&M, USA

**Rapporteur:** Sir Joachim J. MacEbong  
Nigerian Society of Engineers (NSE), Nigeria

**Session Members**
- Dr. Anil Pahwa, Kansas State University, USA
- Dr. Innocent Davison, University of Natal, Durban, South Africa
- Mr. Floyd Galvan, Entergy Corporation, USA
- Dr. Eyad Abed, University of Maryland, USA
- Dr. Philip A. Kuale, University of Benin, Nigeria
- Dr. Emmanuel Glakpe, Howard University, USA
- Dr. Arunsi Chuku, Tuskegee University, USA
- Dr. John Ngudam, University of Yaounde, Cameroon
- Dr. Phillip Fanara, Jr., Howard University, USA
- Dr. Kevin Tomsovic, Washington State University, USA

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### SESSION 2B

10:00 – 11:00  International Representatives’ Forum

**Coordinators:** Prof. Victor C.W. Dzidzienyo, Associate Dean, CEACS, Howard University, USA

**Dr. Chen-Ching Liu,** Professor, and Associate Dean, University of Washington, USA

**Representation:**
- US Department of Energy (DOE)
  
  **Ms. Vickie Bailey** (Invited)  
  Assistant Secretary for Policy and International Affairs

- Participating African Countries – Ambassadors represented by:
  
  **His Excellency Mr. A.O. Soyombo** (Invited)  
  Charge D’Affaire  
  Embassy of the Federal Republic of Nigeria, USA

  **Her Excellency Ms. Barbara Masekela** (Invited)  
  Ambassador  
  Embassy of the Republic of South Africa, USA
VENUE: Howard University Blackburn Center (11:15 am – 2:30 pm)
11:15 – 12:30 pm  Working Lunch with Selected Presentations on Research Activities and Experiences

12:30 – 2:30  Workshop Report Organization & Writing
Facilitators:
- Dr. Joe Chow, Professor, Rensselaer Polytechnic Institute (RPI), Troy, NY
- Dr. James A. Momoh, Program Director, National Science Foundation (NSF), VA

Coordinators:
- Dr. Chen-Ching Liu, Professor and Associate Dean, University of Washington, Seattle, WA
- Sir Joachim Joe MacEbong, Secretary, Nigerian Society of Engineers (NSE), Nigeria

Writing Team: All Session Chairs and Rapporteurs

VENUE: Ralph J. Bunche International Affairs Center (2:30 pm – 4:00 pm)
2:30 – 3:30  Summary Session and Presentation of Action Items by:
Dr. James A. Momoh
Dr. Joe Chow
Program Director, NSF
Professor, RPI

3:30 – 3:45  Photo Session

4:00 pm  Adjournment!

Post Workshop Activities
November 7 – 14, 2003

Schedule of visits to universities

Friday, Nov. 7-13  Travel from Washington DC to Host Universities
Visitors to UW and WSU, Iowa State, Howard University and University of Missouri Rolla; (Local arrangements by the host university)

Thursday, Nov. 13  Travel from Host Universities to Washington DC

Friday, Nov. 14  Visit summary and follow up action/ via videoconference
Return trip to home countries
Acknowledgments from NSF

The National Science Foundation, the Division of Electrical and Communications Systems (ECS) wishes to thank all members of the local committees at Rensselaer Polytechnic Institute (RPI) and Howard University for coordinating and hosting this premier workshop, which serve to promote research and education in power, information Technology, and environment.

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