

Brain Circulation Schemes for Developing Lasting Networks of Excellence

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Outline

- 1.0 The development of networks over a lifetime – not a one-time event**
- 2.0 K-16 cultural exposure and development of foreign language capabilities – key precursors**
- 3.0 Graduate students and postdoctoral scholars**
- 4.0 Young professionals**
- 5.0 Recommendations**

Graduate students and postdoctoral scholars

- **The essential role of flows in both directions**
- **Overcoming financial barriers**
- **Overcoming visa/legal barriers**
- **Enhancing career/professional choices**
- **Making the case through better information**

Young professionals

- **Barriers to travel to scientific meetings**
- **Easing the change of status from postdocs to professionals**
- **Networking focused on young researchers: frontiers of science**
- **Common professional standards**
- **Role of industrial research in global integration**

Kavli Frontiers of Science Symposia

Goal: to advance science for the benefit of humanity and to promote increased public understanding and support for scientists and their work

First U.S. Symposium organized in 1989

Dual purposes:

- Expand horizons of young (≤ 45) scientists
- Build networks for next generation of leaders

About 3,500 participants to date:

- 8 have won Nobel Prizes
- 136 elected to NAS; 12 elected in 2008

International Symposia

Annual international symposia

- German-American began in 1995
- Japanese-American began in 1998
- Chinese-American began in 1998

Other international symposia

- Indo-American (biennial, began in 2005)
- Middle East (2003; 2007)
- United Kingdom (2004)
- France (2008)

Attendance

U.S. attendees selected from among:

- Major fellowships holders (e.g., Sloan, Packard, Pew, Keck, Ellison, Searle)
- Young Scientist Award recipients (e.g., MacArthur, Waterman)
- Other professional distinctions (e.g., HHMI, Presidential Early Career scholars)
- Referrals from National Academy members

Balance geography, scientific discipline, gender

**Foreign participants selected by the counterpart
Academy**

Program Format

Eight two-hour sessions over 2.5 – 3 days

- Overview and presentations (1.25 hours)
- Questions and general discussion (.75 hours)

Structured “free” time

- 30-minute breaks for discussion
- Mixed seating at dinners
- Poster session

Rules of the Road

- **Scientifically literate but non-specialized audience**
- **No jargon! (or define it)**
- **Q&A / discussion period is crucial**
- **There are no “dumb” questions**

Frontiers of Engineering Mission Statement

To bring together outstanding engineers (ages 30-45) from companies, universities, and government labs to discuss leading-edge research and technology, bridging traditional disciplines, and to transfer techniques and approaches across fields in order to sustain and build innovative capacity.

Frontiers of Engineering Symposia Partners

German-American FOE (1998) – Humboldt
Foundation

Japan-America FOE (2000) – Japan Science and
Technology Agency and Engineering Academy of
Japan

Indo-American FOE (2006) – Indo-U.S. Science and
Technology Forum

China-U.S. FOE (2009) – Chinese Academy of
Engineering

Organization

2-1/2 -day meeting chaired and organized by committee of early-career engineers.

60 attendees (30 each country) at bilateral FOEs (location alternates by country). Approx. 1/2 from universities and 1/2 from industry and federal labs.

Four topics covered at each meeting with 3-4 speakers on each topic.

Plenary sessions plus time for informal interactions (longer breaks and mealtimes, poster sessions, breakout sessions, laboratory tours).

Session Topics at Upcoming Meetings

2008 Japan-America FOE, November 17-19, Kobe

Topics: Advances in Automation and Instrumentation for Biotechnology and Health Care, Natural Language Processing, Advanced Sensor Technology, Alternative Energy

2009 German-American FOE, April 23-25, Potsdam

Topics: Complex Systems Design and Control, Renewable Energy, Biosystems Engineering, Materials for Extreme Environments

Alumni Support Activities

- FOE website (www.nae.edu/frontiers) with searchable database and meeting content
- FOE alumni newsletter sent twice a year
- FOE page on LinkedIn
- Provide names of alumni to groups within and outside the National Academies seeking younger engineers for service on panels, committees, media programs, etc.
- Alumni serve as organizers and speakers at subsequent FOE meetings

Recommendations

- EU-U.S. Frontiers of Engineering set for 2010. Make it a showcase.
- Do a better job of identifying opportunities. Knock down barriers.

For Further Information

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