

## **Program for 2015 GSEE/Taiwan Summit - Initiatives that Can Change Science Education**

**National Donghwa University, Hualien, Taiwan**

**June 28 – June 30, 2015**

### **From “Some New Directions, Experiments, and Initiatives for Scientists Engaged in Education” by John Mather and David Pines Feb.10, 2015**

A scientist is “engaged” when he or she is actively involved in efforts outside the classroom to reach a non-expert audience directly or indirectly in order to convey their work, and/or is conducting empirical research on the effectiveness of such efforts. Below we describe some ways in which by working together engaged scientists may be able to make a difference in science education at both a local and a global level. We plan to explore these with the leadership of the NAS, the AAAS, the APS, the AIP, and many others during the coming months. As we do, we will emphasize that there is no unique path to enhancing engagement and measuring its effectiveness. Rather one should try a number of different approaches simultaneously while searching for synergies between them.

GSEE, the Global Partnership for Science Education through Engagement, was established under ICAM’s auspices in 2009 to enhance and expand the global community of scientists engaged in education. It held two Summit Meetings in 2013. At GSEE/Chicago, organized by Tom Rosenbaum and David Pines and sponsored by the University of Chicago, ICAM, the National Academy of Sciences, Argonne National Laboratory, and the American Institute of Physics, a group of 25 leading engaged scientists and educators discussed how best to enhance engagement by scientists and engineers in science education. The participants agreed that GSEE should move forward under a hub and spoke structure with a mix of working groups, workshops, and experiments -- pilot programs that involve physical and life scientists from a broad range of institutions -- and that one long-term goal for GSEE might be creating a “Science of Engagement”. Two of the working groups established there produced preliminary reports that were discussed five months later by the participants at the second Summit, GSEE/Kyoto, that was organized by Akito Arima, Kazuo Nishimura and David Pines. A White Paper, “*Experiments In Engagement*, a new journal on the science of outreach, informal science education, and public engagement”, prepared by the GSEE working group on “National and Global Initiatives in Communications”, was presented by Philip W. Hammer, while that on “Defining Grand Challenges in Engagement”, presented by Martin Storksdieck, provides a useful background for the ideas presented below. This Summit meeting in Hualien, Taiwan is the second one in Asia.

### **June 28 (Sunday) Delegation Arrival GSEE/Hualien**

**18:30 - 21:00 Reception (Guest House: National Donghwa University)**

## **June 29 (Monday)**

### **09:00 - 10:20 Keynote Lectures: (Chair: Dr. Tsai-Yen Li)**

Michiharu Nakamura (President, JST, Japan)

***“Development of Human Resources in Science and Technology for the Next Generation”***

Maw-Kuen Wu (President, National Donghwa University)

***“Talent Cultivation Program of Taiwan”***

### **10:20 - 10:30 Refreshment break**

### **10:30 - 12:00 Policy of Science Education (Chair: Michiharu Nakamura)**

Laura Greene (Member of the US NAS; University of Illinois at Urbana-Champaign)

***“Enhancing Global Engagement and Some US Education & Outreach”***

Kazuo Nishimura (Professor, Kobe University)

***“GSEE/Kyoto - Organization and Activities.”***

Se-Jung Oh (President, Institute for Basic Science, Korea)

***“On-going changes of the National Curriculum for K-12 education in Korea”***

### **12:00 – 14:00 Lunch Break**

### **14:00 - 15:30 Science Education in Different Countries (Chair: S.J. Oh)**

Tai-Kai Ng (Hong Kong University of Science and Technology)

***“STEM & Gifted Education in HK***

Chun-Chen Liao (National Tsing Hua University)

***“Science Education in Taiwan”***

Rebecca Thompson (American Physical Society)

***“Museums, Societies, and Edutainment; Informal Science Education in the United States”***

### **15:30 - 16:00 Refreshment break**

### **16:00 - 17:30 Developing Creativity (Chair: Laura Greene)**

Albert Chang (Duke University, and President of OCPA)

***“Developing Creativity”***

Ting-Kuo Lee (Director, Institute of Physics, Academia Sinica)

***“Physics Education in Taiwan”***

Chia-Liang Cheng (Vice President, National Donghwa University)

***“Learning through Practical Applications”***

### **18:30 – 21:00 Banquet**

**June 30 (Tuesday)****09:00 - 10:30 Learning Science and Career Development (Chair: T.K. Lee)**

Martin Storksdieck (Director, Center for Research on Lifelong STEM Learning  
Oregon State University)

*"The Scholarship on Engaged Scientists: What do we know, What do we still  
need to know?"*

Lin I (National Central University, Academician, Academia Sinica)

*"Learning through Exploration".*

Sue-Ching Jou (National Taiwan University)

*"Social Innovation and Local Development: Reframing the University Social  
Responsibility"*

**10:30 - 11:00 Refreshment break****11:00 - 12:30 Learning Science and Career Development (Chair: C.C. Liao)**

Philip Bo Hammer (American Institute of Physics)

*"Experiments in Engagement: A new Journal for Scientists Engaged in  
Informal Science Education"*

Kazuo Kitahara (Professor, Tokyo University of Science)

*"Bridging Science and Engineering in Education; Endeavor of Science  
Council of Japan"*

Chih-Kuang Lee (National Taiwan University)

*"Drivers and Serendipity Factor on Teaching Interdisciplinary Research"*

**12:30 – 14:00 Lunch Break****14:00 – 15: 30 High School Science Education (Chair: Deputy Minister T.L. Chien)**

Mioko O. Watanabe (Senior Director, JST)

*"Assisting Students to Grow as Future Leaders of Japan and Beyond".*

Fu-Lai Lin (National Taiwan Normal University)

*"National Policy in Developing a STEM Curriculum: The Case of the High-  
Scope Program in Taiwan"*

**15:30 – 16:00 Refreshment break****16:00 – 18:00 Simultaneous Meetings of Two Working Groups formed by all Participants****18:30 – 21:00 Dinner Conversation: Creating an interim institutional structure that  
informs and connects the GSEE/Asia community**