

# Global Young Academy

## Young Scientists Ambassador Programme



**Ambassador:**  
Steve Miller

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**Country of Origin:**

United States (developed country)

**Country of Destination:**

Indonesia (developing country)

**Time of Visit:** July 7th - July 13th, 2011

### Mission Report

#### YSAP Activities Overview.

- (1) Participate in the inaugural [Indonesian-American Kavli Frontiers of Science Symposium](#) sponsored by the US National Academy of Sciences and the Indonesian Academy of Sciences.
- (2) Participate in the [One Day Catalysis Symposium](#) held at the Institut Teknologi Bandung (ITB).
- (3) Engage young Indonesian scientists to encourage their participation in science diplomacy activities, including the [Global Young Academy](#), the [WEF/Annual Meeting of New Champions](#), and various scientific exchange programs with the United States, such as the “[Partnership for Enhanced Engagement in Research](#)” (PEER).



## Background.

The US National Academy of Sciences and the [Kavli Foundation](#) sponsor several [Frontiers of Science Symposia](#) that bring together young US scientists and young foreign scientists (< 45 years old) to discuss mutually important topics. I was invited as one of six US speakers to participate in the inaugural [Indonesian-American Kavli Frontiers of Science Symposium](#), held in [Bogor](#), Indonesia. This meeting was led by presidential science envoy [Bruce Alberts](#) and originated with [President Obama's June 4th, 2009 speech \(Cairo, Egypt\)](#) wherein he stated:

“On science and technology, we will launch a new fund to support technological development in Muslim-majority countries, and to help transfer ideas to the marketplace so they can create jobs. We will open centers of scientific excellence in Africa, the Middle East and Southeast Asia, and appoint new Science Envoys to collaborate on programs that develop new sources of energy, create green jobs, digitize records, clean water, and grow new crops”.

Beyond the Kavli Symposium, the American scientists were invited to participate in additional activities, principally site visits of institutes and universities. As part of a visit to the [Institut Teknologi Bandung \(ITB\)](#), I presented a lecture at the [ITB One Day Catalysis Symposium](#).

## YSAP Activities, Bogor and Bandung, Indonesia.

**2011 Kavli Frontiers of Science Symposium, Bogor, Indonesia.** Six different research topics were featured during the three-day symposium (July 9-11, 2011). Each topic was covered over a period of two hours, including an introductory speaker, one Indonesian speaker, one American speaker, and 45 minutes of discussion time.

- Alternative Energy Supply Responding to Global Challenges
- Biodegradable Plastics, Solution for Future Eco-Materials
- Climate Change: Science, Adaptation and Impact
- Infectious Diseases – biogeography and genetic links
- Rapid Exploration of Marine Microbial Diversity with Metagenomic Methods
- Rice Genomics Research for Better Human Life

In addition to the science discussion topics, there were 51 posters presented, each of which included a one-minute flash poster presentation by the author. In attendance were 40 Indonesian participants and 31 American participants, all of whom were under age 45. Also present at the meeting were US Presidential Science Envoy [Bruce Alberts](#) (former president of the US National Academy of Sciences and current Editor-in-Chief of *Science*), [Sangkot Marzuki](#) (Chairman of the Indonesian Academy of Sciences), and [Suharna Suryapranata](#) (Indonesian Minister of Research and Technology).



*The 2011 Indonesian-American Kavli Frontiers of Science Symposium, Hotel Novotel, Bogor, Indonesia*

My presentation was titled "Next-Generation Commodity Plastics from Plants Instead of Petroleum" and I presented in the session titled "Biodegradable Plastics, Solution for Future Eco-Materials". My Indonesian counterpart in the session, Yessi Permana, is an Assistant Professor from ITB and also leads a research group that targets the creation of plastics from biomass through novel chemical methods. We now have plans to apply for funding from the newly established "[Partnership for Enhanced Engagement in Research](#)" (PEER) program. The program would solidify links between our research groups and ultimately, between our countries. One of our immediate goals is to increase the number of Indonesian students and professors who study in the United States. For example, Professor Permana plans to conduct sabbatical research in my laboratory at the University of Florida, perhaps as a Fulbright Fellow. Indonesia is a particularly relevant country to [my research program](#) because it is the most biodiverse country in the world (per unit area) and produces considerable quantities of biomass in its tropical climate. A second research partnership may form with another Kavli participant, Rino Mukti, also an Assistant Professor from ITB. He works in the field of heterogeneous catalysis and zeolites and we brainstormed some ideas to apply his technology to the facile breakdown of polymeric lignin (the second most abundant polymer on earth) into molecular units suitable for reconstruction into sustainable plastics.

In addition to performing my speaker and participant functions, one of my objectives was to engage young Indonesian scientists and encourage them to participate in science diplomacy activities. In the last slide of my Kavli presentation, I introduced the audience to the [Global Young Academy](#) and encouraged them to contact me during the meeting for additional information. I even advertised the GYA with a poster. Three Indonesians and one American exhibited continued interest in the GYA and also in the [World Economic Forum/Annual Meeting of New Champions](#). Among the four cohorts of WEF/AMNC Young Scientists (including 2008-2011) or among the 130 members of the GYA, there is no representation from Indonesia—despite the fact that it is the fourth largest country with 240 million citizens. I believe that this deficiency could soon be corrected as the three Indonesians have conveyed a specific interest in applying to the GYA in 2011 and attending the WEF/AMNC in 2012. To address the latter, I plan to contact the Chairman of the Indonesian Academy of Sciences as well as the InterAcademy Panel and request a process by which Indonesians could apply and attend.

**ITB One Day Catalysis Symposium, Bandung, Indonesia.** Following the Kavli FOS Symposium, I traveled to Bandung to give an invited lecture at the Institut Teknologi Bandung as part of the 2011 [ITB One Day Catalysis Symposium](#) held on July 12th. The

theme of the meeting was "Catalysis Development Towards Sustainable Chemical Processes". ITB Professor Ismunandar and ITB Assistant Professors Yessi Permana and Rino Mukti served as gracious hosts and organizers. Following the symposium, the American participants were given a tour of the University and, specifically, some of the laboratories in the Chemistry Department. ITB is deemed the most selective university in a country of 240 million people and thus enjoys students and faculty of extremely high quality. Yet it was clear from our brief tour that the poor research facilities are an impediment to their success. I believe that the research culture and environment can be changed over time by increased exposure of Indonesian scientists to Western academic institutions and, of course, prioritization of funds toward research infrastructure. My part will be to collaborate with scientists such as Professor Permana and Professor Mukti and pursue joint funding for chemistry projects that have a real chance of improving the lives of Indonesians and Americans alike.



*ITB Catalysis Symposium presenters and organizers*

**Steve Miller**  
**July 21st, 2011**