



Preparing a Generation to Tackle the Grand Challenges





Saint Louis University

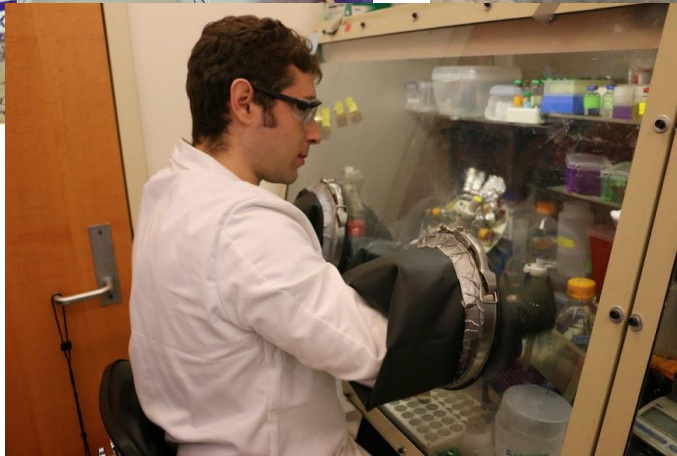
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NAE GRAND CHALLENGES FOR ENGINEERING

NATIONAL ACADEMY OF ENGINEERING



University of Tennessee



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2012

Grand Challenge Scholar

Graduates



Kate Elpe

Nishi Mehta

Megan Carroll

Dela Jakub-Wood



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Make Solar Energy Economical

Explored using alternative energy sources including the use of solar cookers to prepare food and boil water in Northwest India and Cameroon to reduce health hazards and the risk of deforestation. This involved flying to remote villages with a team of environmental missionaries for data collection.

"At one point on my trip, I was walking behind a five-year-old girl carrying her own bundle of wood. My eyes began to tear at the sight of her tiny hands balancing gigantic logs above her head. Finding a solution to the energy crisis was no longer an academic assignment to me; it had become a mission." - Allison Kindig

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"This research is crucial for building medical devices but understanding how differing views of technology effects use is just as important. This holistic view is what makes the Grand Challenges Program unique. Research and design are often thought of as the core and only important areas to becoming a successful engineer and how I can impact the world, but in reality there are many other aspects as well." -Ella Wassweiler

Secure Cyberspace

Investigated the use of hardware random number generators to help websites encrypt their servers specifically in applications related to wireless medical devices.



University of Tennessee
Student Day 学生日

The 2nd Global Grand Challenges Summit
第二届全球重大挑战峰会

September 2015 | 2015年9月13日
Beijing 中国·北京



Saint Louis University



Research Experience

Harvesting Wasted Heat Using
Thermoelectric Generators
Advisor: Dr. Weiss

- Created a method for testing 1" x 2" heat exchangers

- Collected data on heat exchangers' performances

- IMECE Publication: MEMS-based Phase Change for Heat Transfer with Thermoelectric Devices and Energy Harvesting



Thermoelectric Generator (TEG)



Heat Exchanger



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“Overall, the Grand Challenges Program has given me the ability to design and fund my own independent research projects. Some of my recent achievements include getting my work published as professional abstracts, most notably at the Association of Research in Vision and Ophthalmology Annual Meeting.”
–Kasra Zarei

Engineer Better Medicines

The engineering challenges for enabling drug discovery mirror those needed to enable personalized medicine: development of more effective tools and techniques for rapid analysis and diagnosis so that a variety of drugs can be quickly screened and proper treatments can be promptly applied. Quicker, more precise diagnoses may lead to more targeted and effective therapies.

The 2nd Global Grand Challenges Summit Student Day

USC Viterbi
School of Engineering

MY DEFINITION

TECHNOLOGY:
EXPLOITING A *PHENOMENON**
FOR *USEFUL PURPOSES*

- **PHYSICAL** (e.g. Photoelectric Effect)

*And combinations of phenomena
**Including the discovering of new phenomena

Student day, Beijing Global Summit on the Grand Challenges September 12, 2015

University of Tennessee

Dean to Dean: Building the Future through the NAE Grand Challenge Scholars Program

Preparing a Generation to Tackle the Grand Challenges



Moderator:

Jenna P. Carpenter, Dean of Engineering, Campbell University and Chair, NAE GCSP Steering Committee

Panelists:

Wayne Davis, Dean of Engineering, University of Tennessee

Michelle Sabick, Dean of Engineering, Saint Louis University

Hisham Hegab, Dean of Engineering, Louisiana Tech University

Alec Scranton, Dean of Engineering, University of Iowa



Question # 1: Why do you have and support a GCSP on your campus?



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Question # 2: How have you leveraged your GCSP with other programs, initiatives & curricula on your campus?



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Question # 3: How has your GCSP brought value to your campus as a whole?



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Questions?

