To reach a large group of high school students, an educational symposium on “Materials Discovery in Science and Engineering” was planned in collaboration with the Johns Hopkins University Center for Talented Youth. This symposium took place on May 11, 2019, with 100 students and parents hosted at UC Irvine. 13 faculty members were recruited from five different departments to give lectures. The topics ranged from “Nanomaterials for Phase Change Applications” to “Surprising things you can do with carbon: from trapping bed bugs to origami!” in order to build interest and excitement about a range of materials problems. Examples of student demonstrations are shown below, followed by the final program.



Figure . Students and parents learn about chemical analysis and microscopy from Dr. Alexander Dupuy, a postdoctoral scholar supervised by Prof. Julie Schoenung.



Figure . Students and parents observe equipment for the gas atomization of metallic powders.

Johns Hopkins Center for Talented Youth

Family Academic Programs

**University of California, Irvine**

Saturday, May 11, 2019

**9:00 a.m. Check-In**

*Location: Social Sciences Plaza A (SSPA) 1100*

**9:30 a.m. Welcome and Opening Remarks**

*Location: SSPA 1100*

**Teri Miller**

Family Academic Programs Representative

Johns Hopkins Center for Talented Youth

**Tim Rupert, Ph.D.**

Associate Professor

Department of Materials Science and Engineering  
University of California, Irvine

**9:45 a.m. Session I**

Please follow the schedule that corresponds with the group number on your nametag.

**GROUP 1**

***Lab Tours***

*Location: Meet outside of SSPA 1100*

**“Detecting diseases using devices, probes, and imaging”**

**Jered Haun, Ph.D.**

Assistant Professor

Department of Biomedical Engineering

University of California, Irvine

**GROUPS 2 AND 3**

***“Surprising things you can do with carbon: from trapping bed bugs to origami!”***

*Location: SSPA 1100*

**Marc Madou, Ph.D.**

Professor

Department of Mechanical and Aerospace Engineering  
University of California, Irvine

**GROUP 4**

***“Dirty Energy: the Electric World of Soil Microbes”***

*Location: SSPA 1165*

**Allon Hochbaum, Ph.D.**

Assistant Professor

Department of Materials Science and Engineering  
University of California, Irvine

**10:45 a.m. Break and Transition Time**

**11:00 a.m. Session II**

Please follow the schedule that corresponds with the group number on your nametag.

**GROUP 1**

***“Quantitative Percussion Diagnostics: A new paradigm detecting fine cracks”***

*Location: SSPA 1165*

**James Earthman, Ph.D.**

Professor

Department of Materials Science and Engineering  
University of California, Irvine

**GROUP 2**

***Lab Tours***

*Location: Meet outside of SSPA 1100*

**“Photographing atoms using electron microscopy”**

**William Bowman, Ph.D.**

Assistant Professor

Department of Materials Science and Engineering  
University of California, Irvine

**GROUPS 3 and 4**

***“Atoms to Airplanes: Design and Manufacturing of Advanced Materials Systems for Aircraft Propulsion”***

*Location: SSPA 1100*

**Daniel Mumm, Ph.D.**

Associate Professor

Department of Materials Science and Engineering

University of California, Irvine

**12:00 p.m. Lunch**

*Location: TBD*

**1:00 p.m. Session III**

**GROUPS 1 and 2**

***“Advanced Materials for Addressing Infrastructure Challenges”***

*Location: SSPA 1100*

**Mo Li, Ph.D.**

Assistant Professor

Department of Civil and Environmental Engineering

University of California, Irvine

**GROUP 3**

***Lab Tours***

*Location: Meet outside of SSPA 1100*

**“*Advanced manufacturing from rocket thrusters to blades: metals, lasers, and 3D printing*”**

**Julie Schoenung, Ph.D.**

Professor

Department of Materials Science and Engineering  
University of California, Irvine

**GROUP 4**

***“A tale of two types of metal: crystal and metallic glass”***

*Location: SSPA 1170*

**Penghui Cao, Ph.D.**

Assistant Professor

Department of Mechanical and Aerospace Engineering  
University of California, Irvine

**2:00 p.m. Break and Transition Time**

**2:15 p.m. Session IV**

**GROUP 1**

***“Nano-Metallurgy: New Physics and Improved Properties”***

*Location: SSPA 1100*

**Tim Rupert, Ph.D.**

Associate Professor

Department of Materials Science and Engineering  
University of California, Irvine

**GROUP 2**

***“Assembling Gold Nanoparticles into Optical Noses for Sniffing Antibiotic Resistant Bacteria”***

*Location: SSPA 1165*

**Regina Ragan, Ph.D.**

Professor

Department of Materials Science and Engineering  
University of California, Irvine

**GROUP 3**

**“Nanomaterials for Phase Change Applications”**

*Location: SSPA 1170*

**Yoonjin Won, Ph.D.**

Assistant Professor

Department of Mechanical and Aerospace Engineering

University of California, Irvine

**GROUP 4**

***Lab Tours***

*Location: Meet outside of SSPA 1100*

**“Nano Thermal Energy Research (NTER)”**

**Jaeho Lee, Ph.D.**

Assistant Professor

Department of Mechanical and Aerospace Engineering

University of California, Irvine

**3:15 p.m. Break and Transition Time**

**3:30 p.m. Closing Remarks and Evaluations**

*Location: SSPA 1100*