

# 2017 Space Power Workshop

Dr. Mitat Birkan | May 17-19, 2017 | Arlington, VA

Time	Topic	Speaker
0900-0930	Welcome	
<b>PHOTOVOLTAICS</b>		
0930-1015	<u>Integrated Photon Management</u> – The Incorporation of Wavelength Specific Optical Scattering Features within the Subcell a Multijunction Solar Cell	Dr. Seth M. Hubbard Rochester Institute of Technology
1015-1130	DISCUSSIONS	
1130-1300	LUNCH BREAK	
1300-1345	<u>Novel III-V Growth Technologies</u> - Alternative Growth Technologies, Templates and/or Epitaxial Removal Technologies	Dr. Thomas F. Kuech University of Wisconsin
1345-1445	DISCUSSIONS	
1445-1500	BREAK	
1500-1545	(Micro) Rectenna Arrays for Infrared Power Conversion	Dr. Richard Osgood US Army RDECOM NSRDEC
1545-1615	Dynamic Data Driven Modeling of Nanocrystal Growth Processes	Dr. Yu Ding (TAMU)
1615-1700	DISCUSSIONS	
1700	MEETING ADJORNED FOR THE DAY	

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Day 2 | Thursday, 18 May, 2017

Time	Topic	Speaker
0830-0915	Adhesive-free Bonding Technologies - Alternative Approaches to Bonding such as Spinel Eutectic Bond Layer	Dr. Bernie F. Carpenter Aerospace Corp.
0915-1000	DISCUSSIONS	
ENERGY STORAGE		
1000-1100	Aramid Nanofiber - Functionalized Graphene Electrode for Structural Energy and Power	Drs. Jodie L. Lutkenhaus, Dimitris Lagoudas, James Boyd, Micah Green (TAMU) , Haleh Ardebili (University of Houston)
1100-1130	Damage Tolerance and Durability of Structural Power Composites	Drs. Emile Greenhalgh (Imperial College), Leif Asp (Chalmers University of Technology), Dan Zenkert (KTH Royal Institute of Technology)
1130-1230	DISCUSSIONS	
1230-1330	LUNCH BREAK	
1330-1430	Synthetic Atom Energy Storage - High Energy Density Nano-Capacitive Storage	Dr. Alfred Hubler The University of Illinois at Urbana-Champaign
1430-1530	DISCUSSIONS	
SPACE PLATFORM DAMAGE PREDICTION IN THE EXTREME SPACE ENVIRONMENT		
1530-1615	Multi-scale Characterization of Adverse Satellite Surface Conditions in a Thruster Backflow Environment	Drs. Deborah Levin (UIUC), Ray Sedwick (Univ. of MD)
1615-1700	DISCUSSIONS	
1700	MEETING ADJORNED FOR THE DAY	

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Day 3   Friday, 19 May, 2017			
Time	Topic	Speaker	
0900-1000	Energy Storage and Flywheels	Dr. Timothy J. Haugan (AFRL/RQQM)	
1000-1100	DISCUSSIONS		

## **Space Power Research is Multidisciplinary, involves Multi-Technical Directorates**

- **Space Vehicles,**
- **Sensors,**
- **Materials,**
- **Aerospace Systems , ....**

### **Multi-Program Officers**

**Space Propulsion and Power (Birkan)**

**Mechanics of Multifunctional Materials and Microsystems (Lee)**

**Electronic Materials and Devices (Goretta)**

**Aerospace Materials for Extreme Environments (Sayir)**

**Optoelectronics and Photonics (Pomrenke)**

**Dynamic Data Driven Applications Systems (Leve)**

**Computational Mathematics (Cambier)**

**Quantum Electronic Solids (Weinstock), .....**

## Goal:

**There are several Government Agencies (DoD, DoE, NASA, ...), and Industry have been conducting Space Power research (fundamental or applied)**

**Should AFOSR be involved more fundamental research in addition to some examples below ?**

- **MURI Center for Dynamic Magneto-Optics (DYNAMO) - Sayir: “uncover, explain, and exploit dynamic magneto-optical processes and materials for new technological capabilities. A particularly important process is the magneto-electric conversion (MEC) process, that in principle accomplishes the highly-efficient transformation of light energy into electricity without generating much heat in transparent insulating materials.”**
- **Structural Energy and Power (Lee, Birkan, Goretti (Tiley), EOARD)**
- **Multi-scale Characterization of Adverse Satellite Surface Conditions in a Thruster Backflow Environment (Birkan)**

**Any fundamental Research needs to be conducted, and has not been done (or funded) by other sources?**