

2017 Space Power Workshop

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

Time	Topic	Speaker
0900-0930	Welcome	
PHOTOVOLTAICS		
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, Goretta (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?