

## ARO/ARL Workshop on Ultraviolet Devices and Communication Systems

**When** April 23, 2008  
**Where** Kay Board Room (rooms 1111 and 1107), Jeong H. Kim Engineering Building  
 University of Maryland, College Park, Maryland 20742, USA.

### Organizers

Dr. Brian M. Sadler, Army Research Laboratory, Adelphi, Maryland, USA  
 Dr. Robert Ulman, Army Research Office, Durham, North Carolina, USA  
 Prof. Zhengyuan (Daniel) Xu, University of California, Riverside, USA

### Local Arrangements

Prof. Christopher C. Davis, University of Maryland, College Park, USA

### Transportation, Parking and Accommodations

Detailed information is provided at <http://www.ece.umd.edu/visit/>.

### Call for Participation

As space is limited, please RSVP to Dr. Brian M. Sadler [bsadler@arl.army.mil](mailto:bsadler@arl.army.mil), with cc to Prof. Zhengyuan Xu [dxu@ee.ucr.edu](mailto:dxu@ee.ucr.edu).

### Background

Ultraviolet (UV) based technology has great promise for indoor and outdoor military and commercial applications, especially communications. This is based on the significant recent progress in deep UV solid state devices (LEDs and APDs), the unique atmospheric channel characteristics (non-line of sight scattering, solar blind operation), and successful experimental UV test-beds.

### Workshop Program

This one-day workshop is sponsored by the Army Research Office (ARO) and the Army Research Laboratory (ARL). The workshop will bring together a select group of R&D leaders from academia, industry, and government. This small (about 30-40 anticipated attendees) invited participation workshop will consist of several plenary talks and panels, with ample time for discussion of the state of the art, issues, applications, and future R&D directions.

The workshop will largely focus on the following areas:

- (1). UV device technologies, such as sources, filters, detectors, and optical lens and antennas
- (2). UV line-of-sight and non-line-of-sight propagation, scattering, and communication link characterization
- (3). UV communication systems
- (4). Other UV applications, such as sensing and imaging

The detailed workshop agenda is as follows

Time	Title	Presenter
07:30-08:00	Registration	
08:00-08:30	Welcome and Opening Remarks; UV History & Potential Applications	Brian M. Sadler, Army Research Laboratory, USA; Robert Ulman, Army Research Office, USA
08:30-09:15	Deep Ultraviolet LEDs and Lasers using AlGaIn	Asif Khan, University of South Carolina, USA
09:15-10:00	Ultraviolet Avalanche Photodiodes Based Upon AlGaIn Grown on Free-Standing AlN and GaN Substrates	Russell Dean Dupuis, Georgia Institute of Technology, USA
10:00-10:30	Coffee break	

10:30-11:15	SiC Avalanche Photodiodes	Joe C. Campbell, University of Virginia, USA
11:15-12:00	Atmospheric Propagation Effects Relevant to UV Communication	Arun K. Majumdar, Naval Air Warfare Center, CA, USA
12:00-13:00	Lunch on-site	
13:00-13:45	The Indoor Optical Wireless Channel: Characteristics and Challenges	Dominic O'Brien, Oxford University, UK
13:45-14:30	Solar Blind Ultraviolet Communication Test-bed and Performance Study	Zhengyuan Xu, University of California, Riverside, USA
14:30-15:00	Coffee break	
15:00-16:00	Panel discussion session	Christopher C. Davis, University of Maryland, USA; Mohsen Kavehrad, Pennsylvania State University, USA; Brian M. Sadler, Army Research Laboratory, USA (moderator); Isaac Shpantzer, CeLight Inc., USA; Robert Ulman, Army Research Office, USA (moderator); Michael Wraback, Army Research Laboratory, USA; Jian H. Zhao, Rutgers University, USA
16:00-16:10	Concluding Remarks	Brian M. Sadler, Army Research Laboratory, USA; Robert Ulman, Army Research Office, USA

Details of confirmed talks and speakers:

(1). “UV History & Potential Applications”

[Dr. Brian M. Sadler](#)

Army Research Laboratory  
AMSRD-ARL-CI-CN  
Adelphi, MD 20783

[Dr. Robert Ulman](#)

Army Research Office  
Research Triangle Park  
Durham, NC 27709-2211

(2). “[Deep Ultraviolet LEDs and Lasers using AlGaN](#)”

[Asif Khan](#)

Distinguished Professor of Engineering and Carolina Distinguished Professor  
Department of Electrical Engineering  
University of South Carolina  
Columbia, SC 29208

(3). “[Ultraviolet Avalanche Photodiodes Based Upon AlGaN Grown on Free-Standing AlN and GaN Substrates](#)”

[Russell Dean Dupuis](#)

Professor and Steve W. Chaddick Endowed Chair in Electro-Optics  
School of Electrical and Computer Engineering  
Georgia Institute of Technology  
Atlanta, GA 30332

(4). “[SiC Avalanche Photodiodes](#)”

[Joe C. Campbell](#)

Lucian Carr Professor of Electrical and Computer Engineering  
University of Virginia  
Charlottesville, VA 22904

- (5). [“Atmospheric Propagation Effects Relevant to UV Communication”](#)  
[Dr. Arun K. Majumdar](#)  
Senior Scientist and Director  
Optical Beam Control & Atmospheric Propagation Branch  
Naval Air Warfare Center, Weapons Division  
China Lake, CA 93555
  
  - (6). [“The Indoor Optical Wireless Channel: Characteristics and Challenges”](#)  
[Dominic O'Brien](#)  
Reader  
Department of Engineering Science  
Oxford University  
Oxford, OX1 3PJ, UK
  
  - (7). [“Solar Blind Ultraviolet Communication Test-bed and Performance Study”](#)  
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