

CALL FOR PAPERS

*The 2009 U.S. WORKSHOP on the PHYSICS
and CHEMISTRY of II-VI MATERIALS*

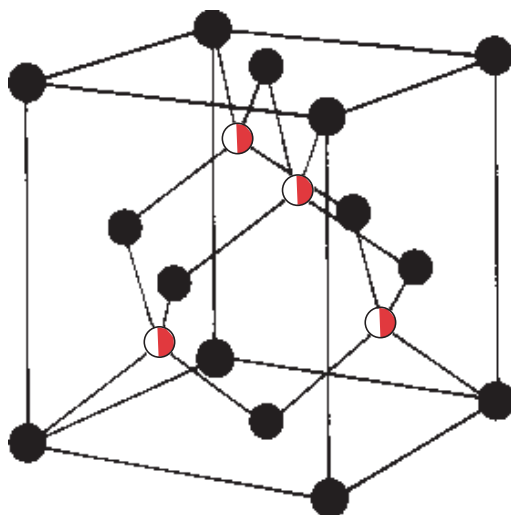
**Embassy Suites Chicago Downtown/Lakefront
October 6–8, 2009
Chicago, Illinois**

II-VI Detector Materials

- IR
- UV
- Gamma-Ray
- X-Ray
- HgCdTe
- CdZnTe
- ZnO

Special Sessions

- ZnO Materials and Devices
 - Surfaces and Interfaces
- Alternative CdTe Substrates
 - HgCdTe Avalanche Photodiodes
- Superlattices: Strained and Unstrained
 - X-Ray and Gamma-Ray Detectors
- II-VI Based Solar Cells
 - Defects and Doping



Participating Agencies

*U.S. Army RDECOM CERDEC Night Vision & Electronic
Sensors Directorate*

U.S. Army Research Laboratory

U.S. Army SMDC

U.S. Navy Electro-Optics Center

Penn State University

Office of Naval Research

Air Force Research Laboratory

The Minerals, Metals & Materials Society

Endorsed by

The American Physical Society

<http://www.ii-viworkshop.org>

2009 II-VI WORKSHOP

Purpose

The purpose of this Workshop is to bring together the industrial, governmental, and academic communities that work with II-VI materials. These II-VI materials are critical in a wide range of detector technologies operating in the infrared, ultraviolet, x-ray, and gamma-ray regions of the spectrum. They include HgCdTe, ZnSe, ZnO, and CdTe, as well as other II-VI semiconductors and alloys. Spectrometers, imagers, and other sophisticated systems exploiting various properties of these materials are finding applications in many fields, including national security, homeland security, medicine, industrial process monitoring, basic science, and more. The Workshop aims at advancing the understanding of the basic physics and chemistry of these materials, and thereby contributes to the continual improvement of these system capabilities.

The 2009 Workshop is the 28th in a series that began in 1981.

Areas of Interest

Areas covered include a broad range of disciplines and materials properties. Included are materials growth and characterization, materials engineering, intrinsic and extrinsic defects and dopants, surface chemistry, fabrication processes, electrical properties and modeling, charge transport, noise sources, optical properties, photorefractive, electro-optical and magneto-optical properties, as well as the interaction among all these.

Workshop Format

The Workshop program will consist of about 60 oral presentations. Invited and contributed papers with a common theme will be grouped for presentation.

To provide ample time for discussion, there are scheduled morning and afternoon breaks. Lunch will be provided, affording additional discussion time. To further promote informal discussion and interaction, the first day will conclude with a wine and cheese reception accompanied by tabletop displays from commercial vendors displaying products and services of interest to the Workshop community.

Authors of accepted papers are encouraged to submit full-length manuscripts, which will be peer reviewed and published as part of the Workshop proceedings in a Special Issue of the *Journal of Electronic Materials*.

Student participation is strongly encouraged. An award recognizing the best student paper will be presented at the conclusion of the Workshop. Funding exists to support travel to the Workshop. Some student financial assistance is available for conference attendees.

Keynote Address

Keith Lannan, *Electro-Optic Technology Division,
Naval Surface Warfare Center*
"The Navy EO/IR Technology Roadmap"

Selected Focus Presentations

Dr. Michael A. Kinch, *DRS Infrared Technologies*
"HgCdTe: Recent Trends in the Ultimate IR
Semiconductor"

Dr. Stuart Horn, *DARPA*
TBA

Invited Speakers

Prof. Eugene A. Fitzgerald, *MIT*
"Design Considerations for Composite Substrates for
HgCdTe Epitaxy"

Dr. Junhao Chu, *National Laboratory for Infrared
Physics, Shanghai Institute of Technical Physics, China*
"Optical Transitions in HgCdTe"

Dr. Randi Haakenaasen, *Norwegian Defence
Research Establishment*
"HgCdTe Research in Norway: MBE Growth and
Characterization"

Dr. William E. Tennant, *Teledyne Imaging Sensors*
" 'Rule 07' Revisited ... Still a Good Heuristic Predictor
of HgCdTe Performance?"

Dr. Michael Jack, *Raytheon Vision Systems*
Topic: HgCdTe APDs

Mr. Thomas N. Casselman, *EPIR Technologies*
"Status of Device Physics Modeling of HgCdTe
IR Detectors"

Dr. Michael Fiederle, *Freiburg Materials Research
Centre*
"CdTe and CdZnTe Pixel Detectors: Material Character-
ization, Technology, and Device Performance"

Prof. Michael E. Flatte, *University of Iowa*
"Theory and Modeling of Type-II Strained-Layer
Superlattice Detectors"

Dr. Martin Walther, *Fraunhofer-Institut für
Angewandte Festkörperphysik (IAF)*
"Antimonide Superlattices: Physics, Technology, and
Challenges"

Dr. Brian E. McCandless, *Institute of Energy
Conversion, University of Delaware*
Topic: Polycrystalline Thin-Film Solar Cells

Check the Workshop Web site for updates

TOPICS

The scope of the Workshop includes the basic physics and chemistry of all II-VI materials and their applications. Materials of interest include HgCdTe, ZnSe, ZnO, CdTe, and CdZnTe. Issues in the following critical areas are of interest:

- **Emerging Detector Technologies**
 - Multiband Detectors
 - Near-Room-Temperature IR Devices
 - HgCdTe Avalanche Photodiodes
- **ZnO Materials and Devices**
- **Materials Growth and Characterization**
 - Control of composition, carrier concentration, and lifetime
 - Novel material and device structures
 - Modeling of growth and processing
 - Equilibrium and non-equilibrium growth
- **Substrates for HgCdTe: CdZnTe and Alternatives**
- **Defects and Doping**
 - Physics of Failure
 - Characterization, particularly non-destructive
 - Effect on electrical and optical properties
 - Thermodynamics
 - P-doping issues in HgCdTe
 - Impurities
 - Diffusion
 - Activation and segregation
 - Dislocations: generation mechanisms, properties, kinetics, characterization, mitigation
- **Surfaces and Interfaces**
 - Etching, passivation, and metallization
- **Modeling and Simulation**
 - Material properties
 - Growth and processing
 - Device physics
- **Characterization of Materials**
 - Electrical, optical, and microstructural characterization
 - Defects and impurities
 - Contactless and other non-destructive methods
 - Device-material correlations
- **X-Ray & Gamma-Ray Radiation Detectors**
- **Radiation Effects in HgCdTe**
- **II-VI-Based Solar Cells**

CALL FOR PAPERS

Papers describing significant advances in the state of the art of scientific results and understanding in the Workshop issues are solicited. Experimental results or theoretical results addressing experiments are encouraged. Emphasis should be on new fundamental physics and chemistry of materials for detector applications. Abstracts must contain results to be considered.

Papers will be selected on the basis of (1) originality, (2) significance of results, (3) quality and completeness of the research, and (4) breadth of interest.

Extended abstracts of all accepted papers will be published in the *Book of Extended Abstracts*, which will be distributed at the Workshop. Submitted full-length manuscripts, after peer review, will be published in the *Journal of Electronic Materials (JEM)*.

WORKSHOP WEB SITE (<http://www.ii-viworkshop.org>)

The Workshop Internet Web page has the latest information on the Workshop and is updated as information becomes available.

ABSTRACTS

1. Abstracts, suitable for publication, should clearly indicate the following:
 - a. original aspects of research
 - b. objective and approach of work
 - c. previous publications or presentations
 - d. experimental data
 - e. scientific implications of results
2. One-page abstracts should be double spaced on a single 8½ × 11-in. sheet of paper. One (1) additional page of supporting figures will be accepted and is encouraged. The title, author(s), and affiliation(s) must be included.
3. A complete mailing address (phone, fax, and e-mail) of the presenter must be included.
4. Abstracts to be considered as student papers must be identified as such, and the name of the advisor must also be included.

5. Abstracts are to be submitted before May 15, 2009 to:

Palisades Convention Management
The 2009 II-VI Workshop
Attn: Ralph Nadell
411 Lafayette Street, Suite 201
New York, NY 10003
212/460-8090, ext. 203, fax -5460
e-mail: Rnadell@pcm411.com

Electronic abstract submission is required. Abstracts should be attached preferably as Microsoft Word files or as PDF files and e-mailed to Rnadell@pcm411.com.

6. Foreign authors requiring a visa to visit the U.S. are encouraged to submit their abstracts as early as possible. Special consideration will be made to ensure that an early application for a visa can be made.
7. Authors of accepted papers will be notified by June 24, 2009. Authors of accepted papers are requested to submit a revised abstract, not to exceed four pages, for inclusion in the *Book of Extended Abstracts* by August 14, 2009.
8. Full-length papers for publication in the *JEM* must be submitted electronically by using the link on the Workshop's Web page (<http://www.ii-workshop.org>). The authors can begin submitting manuscripts on September 28, 2009.

WORKSHOP CALENDAR

| | |
|--|-------------------------|
| Deadline for Submission of Abstracts |May 15, 2009 |
| Notification of Accepts/Rejects |June 24, 2009 |
| Deadline for Late-News Abstracts |August 3, 2009 |
| Deadline for Extended Abstracts |August 14, 2009 |
| Hotel Reservation Deadline |September 11, 2009 |
| Registration Deadline |September 18, 2009 |
| Electronic Paper Submission for Publication |September 28, 2009 |
| 2009 II-VI Workshop |October 6–8, 2009 |

WORKSHOP ORGANIZATION

CO-CHAIRS

M. B. Reine, *BAE Systems*
S. Sivananthan,* *University of Illinois at Chicago*

PROGRAM COMMITTEE

L. A. Almeida, *RDECOM CERDEC (NVESD)*
P. M. Amirtharaj, *U.S. Army Research Laboratory*
J. M. Arias, *Teledyne Imaging Sensors*
I. B. Bhat, *Rensselaer Polytechnic Institute*
L. E. Brown, *Air Force Research Laboratory*
A. Burger, *Fisk University*
T. N. Casselman, *EPIR Technologies*
W. Clark, *Army Research Office*
R. E. DeWames, *NVESD/Corbin Co.*
N. K. Dhar,** *DARPA/MTO*
J. P. Faurie, *EPIR Technologies*
C. A. Hoffman, *Naval Research Laboratory*
R. B. James, *Brookhaven National Laboratory*
S. M. Johnson, *Raytheon Vision Systems*
T. H. Myers, *Texas State University – San Marcos*
J. G. Pellegrino, *RDECOM CERDEC (NVESD)*
H. K. Pollehn, *U.S. Army Research Laboratory*
H. G. Robinson, *SRI International*
H. F. Schaake, *DRS STS – Infrared Technologies*
C. Szeles, *eV Products*
H. R. Vydyanath, *Avyd Devices*

*Proceedings Co-Editor

*Web Site Manager

WORKSHOP COORDINATOR

Ralph Nadell
Palisades Convention Management
411 Lafayette Street, Suite 201
New York, NY 10003
212/460-8090, ext. 203
fax: 212/460-5460
e-mail: Rnadell@pcm411.com

WORKSHOP PARTICULARS

Location and Date

The 2009 II-VI Workshop will be held October 6–8, 2009 at the Embassy Suites Chicago Downtown/Lakefront.

Registration

The Workshop Registration Card, available on-line in June 2009, should be completed and mailed/faxed to:

Palisades Convention Management
The 2009 II-VI Workshop
Attn: Ralph Nadell
411 Lafayette St., Suite 201
New York, NY 10003
Fax: 212/460-5460

The deadline for Workshop registration is September 18, 2009. The registration fee for all attendees, except full-time university students, will be \$695. The special student fee will be \$150. The fees include lunches, refreshments, a copy of the *Book of Extended Abstracts*, and a soft-bound copy of the Workshop proceedings in a Special Issue of the *Journal of Electronic Materials*. A hard-bound copy of the Workshop proceedings can be purchased for an additional \$20. Please make all checks, drawn from a U.S. bank in U.S. dollars, payable to The II-VI Workshop.

Location and Date

A block of rooms has been reserved at the Embassy Suites Chicago Downtown/Lakefront at special Workshop rates. A limited number of rooms will be available to Government employees and university staff/students with proper identification. If calling for reservations, the hotel must be advised that you are a II-VI Workshop attendee to obtain these special rates. On-line hotel reservations will be available through the Workshop Web site in early June. Reservations received after the cut-off date of September 11, 2009 will be subject to availability.

Student Financial Assistance

To help defray the cost of attending the Workshop, the registration fee for students will be \$150. In addition, full-time university students presenting papers will receive up to \$650 in support. This support must be requested in advance.

**THE II-VI WORKSHOP
411 LAFAYETTE ST., SUITE 201
NEW YORK, NY 10003**

THE 2009 II-VI WORKSHOP CALL FOR PAPERS