

# FIRST CALL FOR PAPERS

## SID 2012

**Society for Information Display**  
INTERNATIONAL SYMPOSIUM,  
SEMINAR & EXHIBITION

**June 3 – 8, 2012**

BOSTON CONVENTION &  
EXHIBITION CENTER  
BOSTON, MASSACHUSETTS, USA



SOCIETY FOR INFORMATION DISPLAY

## Special Topics

The Display Week 2012 Symposium will once again be placing special emphasis on four Special Topics of Interest to address the rapid growth of the field of information display in the following areas: 3D, Solid-State Lighting, Green Technologies, and Printed Displays and Electronics. Submissions relating to these special topics are highly encouraged.

**SPECIAL TOPIC ON 3D:** *Display technologies for enabling depth perception in viewers, applications for 3D displays, 3D content generation, measurement and characterization of 3D systems, and their human factors. This year a stereoscopic projection system will be available in the 3D sessions to enable presenters to show 3D footage to complement their talks.*

- **3D TV**
- **Mobile 3D Systems**
- **Autostereoscopic and Multi-View Displays**
- **Directional Backlights**
- **Volumetric Displays**
- **Holographic Display Technologies & Algorithms**
- **Integral Imaging**
- **Novel 3D Display Approaches**
- **Glasses-Based Stereoscopic Displays: Shutter, Polarization, and Color-Separation Based**
- **Characterization of 3D Displays: Crosstalk, Luminance Uniformity, etc.**
- **Human Depth Perception, Comfort, or Performance When Viewing Displays**
- **Applications for 3D Displays**
- **3D Cinema**
- **3D Gaming, and Interactivity**
- **3D Content Generation and Conversion: Animated Films, Games, etc.**
- **Light-Field Displays and Computation**
- **Capturing 3D: Stereoscopic Cameras, Plenoptic Cameras, and Multi-Camera Systems**

**SPECIAL TOPIC ON SOLID-STATE LIGHTING:** *Advancements in the LED and OLED industries open up new opportunities to increase the perception of reality. Submissions on all aspects of solid-state lighting are encouraged, including:*

- Novel Lighting Systems and Sources
- Solid-State Lighting including OLED and LED
- Optical Methods
- Flat Illumination Panels
- Illumination Systems
- Ambient Lighting and Display Interaction
- Lighting Measurements
- Display Backlights
- Novel Lighting-Control Electronics

### **SPECIAL TOPIC ON GREEN TECHNOLOGIES:**

*Papers are sought on the topics of reducing energy and material consumption, reducing waste and emissions, and reducing the use of materials that are harmful to the environment or society. The scope could include new devices, designs, or architectures that offer greener operation or life cycle, or improvements in device manufacturing or supply chain for reduced energy consumption or waste. Some topics of particular, but not exclusive, interest include:*

- New Energy-Efficient Display Devices
- Novel Energy-Efficient Device Designs or Operating Methods
- Introduction of Low-Environmental-Impact Materials or Methods
- Product End-of-Life Recycling and Disposal Strategies
- Energy and Material Reduction in Manufacturing
- Cost Savings Related to Energy and Material Reduction
- Environmental Remediation
- Manufacturing-Waste-Materials Recycling or Treatment
- Use of Renewable Energy Sources in Manufacturing or Device Operation

### **SPECIAL TOPIC ON PRINTED DISPLAYS AND ELECTRONICS:**

*Essential and novel technologies to printed displays and electronics in the field of materials, devices, processes, equipment, and product applications are encouraged, including:*

- Printed display media and devices
- Printed display backplanes and circuitry
- Printable electronic and optoelectronic functional materials
- Printed electronic devices and modules (circuit/PV/lighting/sensor/battery)
- Large-area printing technologies and equipment
- Roll-to-Roll printing technologies and equipment
- In-line inspection and characterization methods
- Integration system of printed electronics and displays

As growing and multi-faceted fields, work relating to these topics can fit under a number of different topics, including Active-Matrix Displays, Applied Vision/Human Factors, Display Applications, Display Electronics, Display Manufacturing, Display Measurements, Display Systems, Emissive Displays, Flexible Displays, Liquid-Crystal and Other Non-Emissive Displays, OLEDs, Projection, and Touch and Interactive Displays. While the special topics sessions will be arranged in a unified program for the benefit of attendees, authors should indicate the appropriate topical track for their abstract in addition to special topic designation (if any).

## ***Symposium Topics***

The Society for Information Display (SID) encourages the submission of original papers on all aspects of the research, engineering, application, evaluation, and utilization of displays. Display Week 2012 will feature topical sessions that focus specifically on selected issues or key developments. Paper submissions are welcome for any of the general symposium topics or any of the specific topical sessions listed below.

The Society plans to include coverage of every aspect of display technology and applications, especially the emergence of 3D TV. Special attention will also be given to all aspects of novel input technologies for displays. Papers are solicited in all aspects of motion-image technology, including device technology (LCD, OLED, PDP, projector, *etc.*) and related system technology. Papers are also solicited in the area of technology development that enables lower-power-consumption and higher-performance display devices for battery-powered applications (mobile phones, tablets, e-books, *etc.*).

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**(1) ACTIVE-MATRIX DEVICES:** *Advances in the innovative development and implementation of active-matrix electronics into displays.*

- **Fine, Slim, High, or Wide: At the Physical Limits of Active-Matrix Displays**
- **Oxide TFTs and Display Circuits**
- **Sensor Integrated Active-Matrix Displays**
- **High-Frame-Rate Driving for Field-Sequential Color and 3D Displays**
- **Novel TFTs and Processing Techniques**
- **Active Matrix for Flexible Displays**
- **Ultra-Low-Power Active-Matrix Displays**
- **New AMOLED Pixels and Backplanes**
- **Active-Matrix Mobile Displays**
- **System-on-Glass (SOG)**

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**(2) APPLICATIONS:** *Papers are sought that discuss unique and innovative applications of all varieties of display technologies for the consumer, industrial, entertainment, commercial, and military fields.*

- **Solid-State Lighting**
- **3D, Stereoscapy, and Holography**
- **Environmentally Friendly (Green) Displays**
- **Touch and Interactive Display Applications**
- **Mobile Displays**
- **Near-to-Eye Displays**
- **Virtual and Augmented Reality**
- **Avionics and Automotive**
- **Kiosks, Signage, and Tiled Displays**
- **Digital Cinema, Entertainment, and TV**
- **Medical Displays**
- **Ruggedized Displays for Harsh Environments**
- **Novel and Emerging Applications**

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**(3) APPLIED VISION / HUMAN FACTORS:**

*All aspects of vision, perception, and human factors as they apply to the design, image quality, and usability of all types of visual display systems.*

- **Stereoscopic and 3D Display Perception**
- **Lighting and Adaptation**
- **Display-Centric Interaction**
- **Display Perception and Image Quality**

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**(4) DISPLAY ELECTRONICS:** *Circuits (integrated or otherwise) for displays, image- and video-processing algorithms, and electronic components for displays.*

- **Display Drivers, TCONs, and New Drive Schemes**
- **Driving Schemes, Algorithms, and Systems for Low-Power and Low-Cost Systems**
- **Color-Correction and Gamma-Tuning Technologies for Better Optical Performance**
- **High-Refresh-Rate Displays for Motion-Blur Reduction and 3D Display Implementation**
- **Video and Image Processing**
- **Backlight-Control Electronics**
- **High-Dynamic-Range Technologies**
- **System-on-Glass (GIP, ASG) and LTPS Display Electronics**
- **Electronics for Emerging Displays**

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**(5) DISPLAY MANUFACTURING:** *Green manufacturing of displays and environmental safety, materials and components; including facilities, sites, processes, site recycling, energy consumption, battery usage, and component recycling.*

- **Green Manufacturing of Displays and Environmental Safety including Materials and Components, Facilities, Sites, Processes, Site Recycling, and Energy**
- **Manufacturing of Non-Emissive and Reflective Flat-Panel Displays (such as LCDs, AMLCDs, Electrochromic Displays, Electrophoretic Displays, and MEMS Displays)**
- **Manufacture of Emissive Flat-Panel Displays (such as PDPs, OLEDs, PLEDs, ELs, CRTs and FEDs)**
- **Display Manufacturing Techniques in Cell Assembly, Encapsulation, Interconnect, and Packaging**
- **Display Materials including Substrates, Films, Adhesives, and Consumables**
- **Manufacturing of Front- and Back-End Equipment including Packaging, Encapsulation, Interconnect, Assembly, and Roll-to-Roll Processing**
- **Test, Repair, Measurement, and Metrology**
- **Manufacturing Productivity**
- **New Manufacturing Materials and Processing such as Roll-to-Roll and Ink-Jet Printing**

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**(6) DISPLAY MEASUREMENT:** *Characterization and measurements of displays and display components.*

- **Optical Characterization and Measurement of Touch-Enabled Displays**
- **Optical Characterization and Measurement of 3D Displays**
- **Optical Characterization and Measurement of Display Materials and Components**
- **Latest Advancements in Display Measurements and Display-Measurement Standards**
- **Optical Property Modeling of Display Technologies**
- **Characterization of Perceptible Display Phenomena**
- **Evaluation of Measurement Methods for Display Applications**
- **Calibration and Verification of Instrumentation**

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**(7) DISPLAY SYSTEMS:** *Novel integration of displays into specialized devices, as well as system-level aspects of electronic displays.*

- **3D Displays**
- **Transparent Displays**
- **Novel Displays**
- **Green Technologies**
- **LCD-TV Systems**
- **Gaming Displays**
- **Cell Phones, Music Players, eReaders, and Other Mobile Displays**
- **Wearable and Near-to-Eye Displays**
- **Avionics, Automotive, Shipboard, Simulator, and Military Displays**
- **Display Systems**
- **Signage**
- **Backlight Systems**
- **Backlight Components**
- **Dynamic Backlights / Local Dimming**
- **Color Sequential**

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**(8) EMISSIVE DISPLAYS:** *All aspects of emissive displays, including PDPs, inorganic EL displays, light-emitting diodes, field-emission displays, quantum-dot displays, and field-emission lamps. Advances in materials and processing of such devices including phosphors, quantum-dot materials, and field emitters are also sought.*

- **Plasma-Display Panels**
- **Field-Emission Displays**
- **Inorganic EL Displays**
- **Light-Emitting Diodes**
- **Phosphors and Quantum-Dot Materials**

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**(9) FLEXIBLE DISPLAYS:** *All aspects of flexible-display electronic-paper technologies including MEMS, non-LC reflective displays on glass, organic electronics, and printed electronics. The scope is to capture display and display components related to paper-like display technologies on novel materials. Advances directed at the development of substrates, fabrication, transistors, printing, and novel deposition techniques, drive techniques, electro-optical effects, devices, manufacturing, and applications for flexible-display technology, electronic paper, and emerging display technologies are sought. Work focusing on materials is also welcome. This interdisciplinary topic will highlight emerging technologies outside the paradigm of established LCD technologies.*

- **Electronic Paper**
- **Flexible OLED Materials, Devices & Displays**
- **MEMS and Other Non-Emissive Flexible Displays**
- **Organic TFTs, Flexible TFTs, and Active-Matrix Backplanes**
- **Flexible Display Materials including Substrates, Films, Adhesives, and Barriers**
- **Integration, Packaging, Testing, and Reliability of Flexible Displays**
- **Flexible-Display Manufacturing of and Equipment for Printed Electronics**
- **Integrated Flexible Electronics**

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**(10) LIQUID-CRYSTAL AND OTHER NON-EMISSIVE DISPLAYS:** *Advances in the development of liquid-crystal and other passive-matrix displays, including electro-optical effects, materials, and devices.*

- **LCDs for Advanced Monitors and TVs**
- **Blue-Phase LCDs**
- **LCDs for Mobile Applications**
- **Bistable Displays/LC-Based e-Paper**
- **Reflective/Transflective Displays**
- **Ferroelectric/Anti-Ferroelectric LCDs**
- **Alignment and Photoalignment Technologies**
- **Non-Emissive Displays for Digital Signage**
- **Microdisplays**
- **Fast-Switching LCDs**
- **LCD Modeling**
- **Wide Viewing Angle**
- **Display Films**
- **LCD Materials and Components**

- **Nanotechnology for Non-Emissive Displays**
- **Driving Mechanisms**
- **Photonics Optical Components for LCDs**
- **Polymer Composites**
- **LC-Based Flexible Displays**
- **LC Technologies for 3D**

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### **(11) ORGANIC LIGHT-EMITTING DIODES**

**(OLEDs):** *Papers are sought on display design and performance of small-to-large-area panels, including OLED displays utilizing poly-Si, a-Si, microcrystalline silicon, CMOS crystalline silicon, and emerging areas of organic TFTs and mixed-oxide transistors, including ZnO-based materials. Papers that discuss the progress and challenges for OLED display performance and manufacturing issues as compared to LCDs and plasma displays are of particular interest.*

- **OLED TV: Mobile and Large-Area Applications**
- **Novel OLED Materials and Architectures Enabling Emerging OLED Displays**
- **Active- and Passive-Matrix OLED Display Technology**
- **Emerging OLED Displays**
- **OLED Device and Materials Fundamentals**
- **Injection and Transport Mechanisms, Molecular Engineering, and Device Structure**
- **OLED Stability and Degradation Mechanisms**
- **OLEDs Applications for Lighting**
- **OLED Manufacturing**
- **OLED Systems Packaging, Integration, and Cost Reduction**

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**(12) PROJECTION DISPLAYS:** *Applications for projection displays continue to grow as they continue to dominate the large-screen market and become more common even for small images. Authors are invited to submit papers on all aspects of projection displays, including components, finished projectors, complete projection systems and projection applications. Projectors of all types will be covered, including pico/micro/nano projectors, mainstream projectors, large-venue projectors, rear-projection-based cubes, short-throw projectors, consumer rear projection, and other designs for specific applications. Components of interest include microdisplays (SLMs), light sources, optical components, projection screens, etc.*

- **Electronic Projection Systems Based on Microdisplays, Scanned Lasers, or Other Technologies**
- **Pico-/Micro-, Mainstream, and Large-Venue Projectors; Multi-Projector Arrays**
- **Emerging Applications for Projection Systems**
- **Human Factors of Projection Systems and Projection Applications**
- **Projection System Components, Including Image-Generating Components, Light Sources, Optics, Projection Screens, and Electronics**
- **Opto-Mechanical Design of Projection Systems and Components, Including Lifetimes, Thermal Properties, and Acoustic Noise**
- **Other topics Related to the Design, Manufacture, or Application of Projection Systems, Subsystems, or Components**

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### **(13) TOUCH AND INTERACTIVE DISPLAYS:**

*Advances in touch-screen technologies, applications, driving electronics, system integration, and human interactions. The advanced materials and process technologies associated with touch design and applications will also be covered.*

- **Advanced User Interfaces**
- **Multi-Touch Systems**
- **Novel Touch Configurations & Applications**
- **Materials and Process Technologies**
- **Driver Electronics, Subsystems, and Algorithms**
- **Touch-Performance Evaluation, Methodology, and Standardization**

## Format of Submissions

All authors are required to upload their submissions to <http://www.sheridanprinting.com/pcm/sid>.

Please follow the instructions on the URL site. Submissions should consist of a 35–50 word abstract and a technical summary that follows the instructions below.

**Page 1:** Paper Title, Abstract, Oral/Poster Preference, Symposium Topic, and Keywords. Include the names of all authors with their affiliations, addresses, telephone/fax numbers, and e-mail addresses, and underline the name of the presenter when there are two or more authors. Your submitted 35–50 word abstract, highlighting the key details of your paper, will be published in the Advance Program if your paper is accepted. The abstracts are usually edited to accommodate the program format.

**(A)** Indicate if you wish to have your paper considered for oral or poster presentation. If you do not so indicate, the committee will consider your paper for both.

**(B)** Indicate the closest matching Symposium Topic from the list provided and include a minimum of two keywords below the abstract for future use in a database.

**(C)** Indicate whether the presenter of the paper is currently a student.

**Pages 2–5:** *Technical Summary.* Include the first author's name and the title of the paper on each page. A technical summary (FOUR-PAGE MAXIMUM) adhering to the following requirements is required:

**(1) Objective and Background:** Briefly describe the goals and intent of your project and give background factors that led to the new results.

**(2) Results:** Describe, in detail, the specific results that will be presented at the SID 2012 Symposium. Please provide a technical description of how the results were achieved. Quantitative and/or graphical data should be included so the Program Committee can properly evaluate your submission.

**(3) Impact:** Discuss the significance of your work and compare your findings with previously published work.

**(4) References:** List a few main references covering projects in related areas.

**(5) Prior Publications:** Symposium papers must be original contributions. If your organization has published or presented material on similar work in English, *please explain how the present material differs.* Applications papers need not be original.

## ***Format of Presentations***

Oral presentations will conform to a 20-minute format (15 minutes for presentation and 5 minutes for questions and answers). As usual, a Poster Session will be held. Accepted papers will be assigned to either oral or poster presentation at the discretion of the Program Committee.

## ***Abstract/Summary Submissions***

Please post your abstract and technical summary on the following URL:

<http://www.sheridanprinting.com/pcm/sid>

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### **For further information contact:**

Norbert Fruehauf (Technical Program Chair)  
University of Stuttgart  
Stuttgart, Germany  
telephone +49-711-685-66922  
e-mail: [norbert.fruehauf@lfb.uni-stuttgart.de](mailto:norbert.fruehauf@lfb.uni-stuttgart.de)

Sergei Yakovenko (European Subcommittee Chair)  
LensVector, Inc.  
Mountain View, CA, USA  
telephone 1+914/263-3544  
e-mail: [sergeiyakovenko@yahoo.com](mailto:sergeiyakovenko@yahoo.com)

Chang Hee Lee (Asian Subcommittee Chair)  
Seoul National University  
Seoul, Korea  
telephone +81-2-880-9093  
e-mail: [chlee7@snu.ac.kr](mailto:chlee7@snu.ac.kr)

Bill Klein (Symposium Coordinator)  
Palisades Convention Management, Inc.  
New York, NY, USA  
212/460-8090 x204 (fax -5460)  
e-mail: [wklein@pcm411.com](mailto:wklein@pcm411.com)

## ***Points of Contact***

All questions or inquiries for further information should be directed to one of the following:

Helge Seetzen (General Chair)  
TandemLaunch Technologies  
Westmount, Quebec, Canada  
telephone 1+514/903-0853  
e-mail: helge.seetzen@tandemlaunchtech.com

Norbert Fruehauf (Technical Program Chair)  
University of Stuttgart  
Stuttgart, Germany  
telephone +49-711-685-66922  
e-mail: norbert.fruehauf@lfb.uni-stuttgart.de

Jay Morreale (Symposium Coordinator)  
Palisades Convention Management, Inc.  
New York, NY, USA  
212/460-9700  
e-mail: jmorreale@pcm411.com

## ***Timetable***

The deadline for receipt of abstracts and technical summaries is December 1, 2011. Notification of acceptance will be e-mailed by February 24, 2012 (March 21 for Late-News papers). Authors of accepted papers will be directed to an on-line "Authors Kit" with instructions for the preparation of the paper to be published in the Symposium Digest. The paper shall consist of four pages, including all illustrations and is due March 21, 2012 (March 28 for Late-News papers).

## ***Display Week 2012 Features***

Technical Symposium ... Applications Sessions ...  
Special Focus Sessions ... Poster Session ...  
Keynotes ... Invited Papers ... Distinguished Papers  
... Author Interviews ... Short Courses ... Applications  
Tutorials ... Technical Seminars ... Awards Banquet  
... Annual Luncheon ... Vendor Exhibitions ... Vendor  
Forum ... Business Conference ... Investors Confer-  
ence ... Market Focus Conferences ... and much  
more!

## ***Product Engineering/Applications***

***Attention Manufacturers and Suppliers:*** These sessions contain information on the practical aspects of display technology such as design, manufacturing, and testing of displays and display-related products. Papers are generally product or process oriented and deal with how something was engineered, how it works, what to use, how to use it, and what to avoid. Emphasis should be technical, not marketing. Abstract, paper submission, and presentation requirements are the same as for the Symposium papers, although the content does not have to be original. Applications Sessions will be conducted in parallel with the Symposium sessions. Applications papers are welcome in all areas of display technology previously listed under the applications symposium topics.

### ***Deadlines and Key Dates***

Abstract/Summary . . . . .	Dec. 1, 2011
Late-News Abstract/Summary . . . . .	Feb. 24, 2012
Accept/Reject Letters . . . . .	Feb. 24, 2012
Late-News Accept/Reject Letters . . . . .	Mar. 21, 2012
Digest Paper Submission . . . . .	Mar. 21, 2012
Late-News Digest Submission . . . . .	Mar. 28, 2012
Seminar Notes Submission . . . . .	Apr. 16, 2012
Display Week 2012 . . . . .	June 3–8, 2012
Sunday Short Courses . . . . .	June 3, 2012
Monday Technical Seminars . . . . .	June 4, 2012
Applications Tutorials . . . . .	June 4, 2012
Business Conference . . . . .	June 4, 2012
Investors Conference . . . . .	June 5, 2012
Exhibition . . . . .	June 5–7, 2012
Vendor Forum . . . . .	June 5–7, 2012
Symposium . . . . .	June 5–8, 2012
Market Focus Conferences . . . . .	June 6 & 7, 2012