



# imid 2021

The 21st International Meeting on Information Display  
On Leap for Next 20; Breakthrough in Display Technology & Science

August 25-27, 2021 / COEX, Seoul, Korea

Jointly held with the Exhibition IMID organized by KDIA (Korea Display Industry Association)

## | Keynote Speakers |



*"Displays shifting paradigms in Electronics"*

**Kai Beckmann**  
CEO Electronics  
Merck KGaA, Germany



*"TBA"*

**Bernard Kress**  
Principal Optical Architect / Vice President  
Microsoft Corporation, USA / SPIE, USA

## | Important Dates |

- ✓ Paper Submission March 31 (Wed.) April 21 (Wed.)
- ✓ Acceptance Notification May 26 (Wed.)

- ✓ Author Registration July 31 (Sat.)
- ✓ Pre-registration August 6 (Fri.)

ORGANIZED BY The Korean Information Display Society (KIDS) KIDS  
The Society for Information Display (SID) SID

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## CONFERENCE INFORMATION

<b>Format</b>	On/Off-line Hybrid Conference	
<b>Date</b>	August 25 – 27, 2021	
<b>Location</b>	COEX, Seoul, Korea & Online	
<b>Organized by</b>	- The Korean Information Display Society (KIDS) - The Society for Information Display (SID)	
<b>Program</b>	- Opening Ceremony - Keynote Addresses - Tutorials	- Conference - Young Leaders Conference - Exhibition

## PROGRAM AT A GLANCE (TENTATIVE)

Aug. 25 (Wednesday)	Time		Room A	Room B	Room C	Exhibition Hall (3F)
	09:00-09:30	30	Opening Ceremony			Exhibition
	09:30-10:00	30	[Keynote I]			
	10:00-10:30	30	[Keynote II]			
	10:30-11:00	30	[Keynote III]			
	11:00-11:30	30	[Keynote IV]			
	11:30-13:00	90	Lunch			
	13:00-14:30	90	Oral 01	Oral 02	Oral 03	
	14:30-15:00	30	Break Time			
	15:00-16:30	90	Oral 04	Oral 05	Oral 06	
	16:30-17:00	30	Break Time			
	17:00-18:30	90	Oral 07	Oral 08	Oral 09	
Aug. 26 (Thursday)	Time		Room A	Room B	Room C	Exhibition Hall (3F)
	09:00-10:30	90	Oral 10	Oral 11	Oral 12	Exhibition
	10:30-11:00	30	Break Time			
	11:00-12:30	90	Oral 13	Oral 14	Oral 15	
	12:30-14:00	90	Lunch			
	14:00-15:30	90	Oral 16	Oral 17	Oral 18	
	15:30-16:00	30	Break Time			
	16:00-17:30	90	Oral 19	Oral 20	Oral 21	
Aug. 27 (Friday)	Time		Room A	Room B	Room C	Exhibition Hall (3F)
	09:00-10:30	90	Oral 22	Oral 23	Oral 24	Exhibition
	10:30-11:00	30	Break Time			
	11:00-12:30	90	Oral 25	Oral 26	Oral 27	
	12:30-14:00	90	Lunch			
	14:00-15:30	90	Oral 28	Oral 29	Oral 30	
	15:30-16:00	30	Break Time			
	16:00-17:30	90	Oral 31	Oral 32	Oral 33	



## ON-LINE TUTORIALS

The tutorials are aimed to provide introductory courses for the newcomers to the information display technologies. The tutorials provide audience with four basic topics: OLED, Backplane, QD, LED Fundamentals, Sensor Application, AR/VR. Participants can enjoy the tutorials in Online Conference (On-demand).

No.	Topic	Speaker
1	OLED	Canek Fuentes Hernandez (Georgia Inst. of Tech., USA)
2	Backplane	TBA
3	QD	Dmitri Talapin (Univ. of Chicago, USA)
4	LED Fundamentals	Young Joon Hong (Sejong Univ., Korea)
5	Sensor Application	Seongdeok Ahn (ETRI, Korea)
6	AR/VR	TBA

## ON/OFF-LINE YOUNG LEADERS CONFERENCE

Yong Leaders Conference will be arranged for 2 Sessions.

### YLC 1

YLC Session I is open to young scientists who would like to share and discuss their research achievement. Young Scientists are carefully chosen through our technical program committee and recommended for this session. All participants will take this unique opportunity to hear their recent research results. Please join our Young Leader Conference.

### YLC 2

YLC Session II is open to students who would like to share and discuss their research results. After oral presentations, outstanding presenters among all YLC applicants will be selected by our committee based upon their research originality and technical significance.

## PAPER SUBMISSION: ~~MARCH 31, 2021 (WED.)~~ **APRIL 21 (WED.)**

All authors are required to upload their paper (Only 1 Page) through the online paper submission system (<https://genimice.com/imid2021/index.do>). Please prepare your paper in PDF format for the submission. The paper template can be downloaded from our website ([http://www.imid.or.kr/2021/guideline\\_paper\\_submission.asp](http://www.imid.or.kr/2021/guideline_paper_submission.asp)).

## ACCEPTANCE NOTIFICATION: **MAY 26, 2021 (WED.)**

Notification of Acceptance will be sent via e-mail to the corresponding authors and speakers. The submitted paper will be evaluated based on technical merits by peer reviewers. The accepted paper might be reassigned to an oral or a poster presentation of appropriate topical session by our technical program committee.

## REGISTRATION FOR AUTHORS: **JULY 31, 2021 (SAT.)**

At least one author of each accepted papers must complete his/her registration and pay the registration fee by July 31, 2021. Otherwise, the papers will be withdrawn.

## CONFERENCE TOPICS

### 01. Special Session I: 20th Anniversary Special Session

### 02. Special Session II: AI & Computational Technologies for Display

- All aspects of AI computational technology for display design/manufacturing/measurement; human vision perception; numerical algorithm; OLED device simulation; Prediction of material/electrical/optical/mechanical properties of display; Enhancement of image quality.

### 03. Special Session III: Display with Free Form Factors

- Flexible, foldable, rollable, and stretchable display technologies, including deformable display materials (substrates, transparent conductors, TFTs, barrier layers); novel processes and manufacturing methods (printing, novel deposition techniques, R2R, lift-off); electro-optical effects; driving techniques and designs for deformable electronic devices; and device performance and reliability for all deformable display technologies.

### 04. Special Session IV: High Resolution Display

- Materials, Manufacturing processes and devices for High-Pixel-Density Displays, Image Quality, and Processing for High-Pixel-Density Displays; Human Factors and Visual Experiences for High-Resolution Displays (LCD, OLED, Micro-LED, Quantum dot, other emerging display type; for Mobile, Mid-size, Large-area, HUD, AR/VR/MR), Pixel Structures, Optics, and Driving Techniques, System Integration, Reliability, and Cost-Reduction Efforts, Content Generation, and Processing for High-Pixel-Density Displays.

### 05. Active-Matrix Devices

- Micro & nano-crystal silicon, oxide, oxynitride, metal halide, organic, and carbon nanomaterials based TFTs; quantum dot, perovskite, chalcogenides, 2D layered materials, and other emerging semiconducting materials and gate dielectric materials for TFTs; solution processed & printed TFTs; new structures/processes and novel application of TFTs; active-matrix devices for LCD, OLED, LED, QLED, and micro displays; novel and high performance active-matrix devices and system-on-panel (SOP); backplane technologies for emerging displays.

### 06. Applied Vision/Human Factors

- Measurement methods based on both human vision and physical properties; autostereoscopic, AR, and VR form factors, etc; effective use of a display capability to create a more immersive and compelling experience; approaches to take advantage of limitations of the visual system to process or transmit display data more efficiently; novel methods of user interaction and HMI with display systems.

### 07. AR/VR/MR and 3D Display Optics

- Display technologies for AR/VR/MR systems; spatial tracking, localization, mapping, and navigation techniques; end-to-end system integration and latencies; inputs, interfaces, and interactions; human factors and user experience considerations; mapping and rendering of virtual objects onto the physical world; object, human, and scene capture; reconstruction, recognition, and understanding; biometrics and user authentication; AR/VR/MR applications.

- 3D and realistic display systems including stereoscopic, autostereoscopic, multi-view, super-multi-view, volumetric, holographic, aerial, hyper-realistic displays; 3D contents generation including 3D image capture and 2D-3D contents conversion; user-interaction with 3D displays; 3D image formats and standards; 3D image compressions; measurement and performance evaluation for 3D Displays; techniques for realistic and immersive experience; human factors; optical technologies for various display systems and devices including LCD and OLED.

### 08. Display Electronics and Systems

- Advanced algorithms for display driving technology such as AI; display system and peripheral designs; touch interface electronics; TFT circuits (driving methods and circuits for display devices and systems); driver ICs; image signal processors; display interface technologies; driving electronics of touch panels; image quality enhancement methodologies and systems; neuromorphic systems; all novel integrations of displays into specialized devices as well as system-level aspects of electronic displays.

### 09. Display Manufacturing and Processes

- Thin and thick film deposition, lithography, etching, cleaning, printing, coating and various plasma technologies; process & equipment technologies for new and emerging displays including flexible & wearable applications; manufacturing issues of breakthroughs in the displays such as performance, cost reduction, high throughput and flexibility; material issues in display process, including synthesis or deposition of emerging materials; process & equipment technology for display circuits and interfaces; process & equipment for printed electronics including display and sensors fabrication.

### 10. Emerging Materials and Devices for Display Technology

- Emerging display materials and device architectures such as 2-dimensional (2D) materials, organic/inorganic perovskite materials, perovskite quantum dot, graphene quantum dot, 2D layered material quantum dot, light-emitting devices, and metamaterials/metasurfaces made thereof. Transparent conducting electrode materials for display (Silver nanowire, metal mesh, graphene, conducting polymers, etc). Display

elements or systems tailored to wearable and human-interfacial applications. Biomedical applications such as phototherapies or photo-biomodulation; electronic shelf labels or signages; automotive or aviation display applications; medical-grade high-contrast/high-definition displays, and/or interactive display applications.

## 11. Intelligent System for Interactive Display

- Camera under Display for Photo/Video Capture and Fingerprint Sensing; Sensor-in-Pixel (SIP) Techniques, Including Optical and Force Sensors, Touch and UI/UX sensor components; integration technology; touch gesture & motion controls; interactive in feedback actuators; next-generation tactile sensors and actuators; soft haptics for interactive display; soft actuators and applications; human-interactive sensors. other sensor technologies.

## 12. Lighting Materials and Applications

- New development of lighting materials including hybrid lighting technologies; solid-state lighting and LED/OLED, back-light units (BLUs); phosphors, quantum dots and other color-conversion techniques for lighting applications; light extraction optics; heat dissipation, standardization and certification; photometry, driver IC, novel lighting convergence technologies for ocean/agricultural/medical/IT/bio/smart/automotive applications.

## 13. Medical/Bio-integrated Devices and Display

- Deformable or wearable devices and display; biointegrated or bioinspired optoelectronics; implantable medical devices with display; digital healthcare devices and robotics; skin-like display; biocompatible or biomimetic materials; bio-device interface; 3D optoelectronic scaffolds; integration processing strategies to address the profound mismatch between biology and optoelectronics; biomimetic functionalities such as bioresorption, self-healing, multifunctional responsiveness, breathability, and recyclability.

## 14. Micro-LEDs

- Advances in LED-based displays; epitaxial and chip processes for micro-LED pixels; the materials and manufacturing process technologies for transfer printing and bonding; phosphor and quantum dot materials for color conversion; frontplane modules; active and passive driving methods for backplanes; flexible and miniaturization technologies; flexible patterns and micro-LEDs in stretchable applications; and active device integration for bio-medical and automotive applications.

## 15. LC Technologies and Electro-Optic Materials

- High image quality/resolution/dynamic range LCDs; QD-enhanced LCDs; automotive LCD applications; LC for AR/VR and 3D displays; molecular design/synthesis/new LC materials; LC alignment and characterization; LC elastomers and stimuli-responsive materials; LC for EL/PL components; LC for conformable displays; smart window applications; optical design and simulations; optical films for displays; foldable/stretchable films; LC photonic crystals and lasers; LC semiconductors; LC-based sensor; LC lens; up/down conversion LC materials; LC materials for GHz/THz wave modulation; nano-patterning LC template.

## 16. OLED Frontplanes

- OLED materials; device physics and characterization for high-performance OLEDs; enhancement of out-coupling efficiency; improvement of optical properties of OLEDs; device stability and degradation analysis; organic and inorganic interfaces in OLEDs; OLED electrodes; OLED manufacturing; OLED patterning process; solution-processed OLEDs; white OLEDs for displays; encapsulation materials and processes; environmental reliability; novel applications.

## 17. Quantum Dots

- Synthesis and characterization of quantum dots; optical and electrical properties of quantum dot materials; quantum dot-based photo-/electroluminescence devices; quantum dot-based energy conversion devices and systems; various optical and electrical applications using quantum dots.



## AWARDS

The Award Committee will select award winners from among the presenting authors of oral presentations and posters based on the quality of the presentation at the conference. Please submit your paper for the chance to win an award!

Name of Awards	Grade	Numbers	Prize (per paper)
Merck Award		1 Person	KRW 15,000,000
Merck Young Scientist Award		1 Person	KRW 5,000,000
KIDS Awards (Sponsored by LG Display & Samsung Display)	Gold	2 papers	KRW 4,000,000
	Silver	2 papers	KRW 2,000,000
	Bronze	2 papers	KRW 1,000,000
UDC Innovative Research Award		1 Paper	KRW 15,000,000
UDC Pioneering Technology Award		1 Paper	KRW 15,000,000

### Important Note

- KIDS Awards and UDC Awards are applicable to the papers submitted during the regular submission period (Deadline: ~~March 31, 2021~~ April 21, 2021).
- To be included in the candidates of KIDS Awards and UDC Awards, each author should upload a full paper (at least 4 page or more) through the paper submission on the online system within the submission deadline.
  - The final winner of UDC Awards will be selected by the KIDS Award Committee through final presentation review.
  - If you would be the final awardee, it is recommended to submit your paper to JID (Journal of Display). JID is now indexed in the Science Citation Index Expanded (SCIE).



## OFF-LINE IMiD 2021 KOREA DISPLAY EXHIBITION

IMiD 2021 will be jointly held with the Exhibition IMiD organized by KDIA (Korea Display Industry Association) which has been annually conducted in October. This Exhibition will run in conjunction with the conference program and offer the exhibition opportunity to interested companies and organizations. If you want more information about exhibition, please visit <http://imidex.org/eng/index.php>

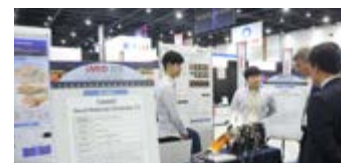
- **Date:** August 25-27, 2021
- **Place:** Hall C (3F), COEX
- **Organized by:** Korea Display Industry Association (+82-2-3014-5274)



Type	Booth Type (1 booth : 9sqm)	General Application (by June 30, 2021)	Early-Bird Application		Remarks
			1 <sup>st</sup> / 10% DC (by February 28th, 2021)	2 <sup>nd</sup> / 5% DC (by April 30th, 2021)	
Overseas company	Raw Space	USD 3,100	USD 2,790	USD 2,945	<ul style="list-style-type: none"> <li>· Raw Space: Exhibition area only</li> <li>· Shell Scheme booth: Exhibition area &amp; Standard equipment</li> <li>*Standard equipment given to the Shell Scheme booth: system, sign, lighting, information desk, chair, pytex, etc.</li> </ul>
	Shell Scheme booth	USD 3,800	USD 3,420	USD 3,610	

## OFF-LINE SF-ZONE (SHOW ME THE FUTURE ZONE)

Our organizing committee of IMiD 2021 has made SF-Zone to offer opportunity for company and organization related to display field to demonstrate their recent display technology and consult with display specialists. **SF-Zone is open to any company or institute who wants to demonstrate their display technology.** Our organizing committee is encouraging participation of the **venture companies, companies, universities, research institutes.**



<b>Date</b>	August 25-27, 2021
<b>Place</b>	Hall C(3F), COEX, Seoul, Korea
<b>Items</b>	Product or Technology Related to Display
<b>Application Deadline</b>	April 30, 2021 (* Applications can be rejected if all spaces have been reserved out.)
<b>How to Apply</b>	1) Fill in the application form 2) Send the application to the IMiD 2021 Secretariat ( <a href="mailto:imid@k-ids.or.kr">imid@k-ids.or.kr</a> ).

## ON-LINE i'M in Display

"i'M in Display" is particularly meaningful as it is the first time via online conference exhibition. In this online photo exhibition, we hope to share the amazing experience in the moment of a new discovery in the field of information display with participants anytime, anywhere. This will allow us to get the technical knowledge as well as to see the beauty as a work of art.

"i'M in Display" is open to anyone who participates in IMiD 2021. We are encouraging participation from universities, research institutes and companies related the information display fields. After the online photo exhibition, we will select the best photo and award a prize. Don't miss this exciting chance!

### [i'M in Display Information]

- **Theme:** Amazing moments of the new discovery in the field of information display
- **Schedule:** Aug 25(Wed.) - 27(Fri.), 2021
- **Venue:** Online Conference Platform of IMiD 2021
- **Application Deadline:** June 30, 2021
- **Applicable Materials**
  - Photographs related to display development or fundamental research (e.g., microscope photographs, SEM photos, Equipment photos, etc.)
  - Graphical simulation results or drawings, graphs, illustrating a display-related concept or phenomenon.
- **How to Apply**

Complete the application form and submit the photos via Google form in website.

※ Please submit the photo file within 10MB. (JPEG format)    ※ Each applicant is permitted to submit up to two photo works.

• Six awards will be given to the most interesting and imposing works.

## SPONSORSHIP

Our Organizing Committee of IMiD 2021 welcomes sponsors from interested companies and institutions. We have a range of sponsorship packages designed to suit all your needs. Each allows you to showcase your products and services where the top marketing decision-makers and influencers network. All sponsorship categories are filled on first-come, first-serve basis.

The Sponsorship prospectus can be downloaded from our website (<http://www.imid.or.kr/2021/sponsorship.asp>).

### How to Apply

- Please download the Sponsorship Application form, fill out and e-mail or fax it to the IMiD 2021 Secretariat ([imid@k-ids.or.kr](mailto:imid@k-ids.or.kr) / +82-42-472-7459) **by July 1, 2021**.
- Pay the contribution deadline within a month from invoice issue date.
- Please send the receipt to the secretariat for confirmation of full payment.

### Type of Sponsorship

Benefits	Online Sponsorship				
	1. Banquet	2. Lanyard	3. Mask	4. Promotion Video on log-in Page for Online Conference (3 Slots)	5. Watermark logo on Online Conference Site
	KRW 25,000,000 <b>SOLD OUT</b> 12 Persons	KRW 10,000,000 <b>SOLD OUT</b> 4 Persons	KRW 10,000,000	KRW 10,000,000	KRW 10,000,000
Free Registration			4 Persons	4 Persons	4 Persons
Horizontal Banner in Keynote Session	O	O	O	O	O
Logo on Program Book, Official Website, E-Newsletter, Screen at Session Room	O	O	O	O	O
Congratulatory Talk	O	X	X	X	X
Video Advertisement on Wide Screen at the Banquet	O	X	X	X	X
Logo Advertisement Above Information Desk	O	O	O	O	O
E-Booth	O	O	O	O	O
Promotion Video on E-Booth	O	O	O	O	O
Logo on Online Conference Site	O	O	O	O	O

fits	6. Participants Paper Band	7. Pen	8. Photo Wall	9. Fill out Desk	10. Ad. on Program Book
	KRW 5,000,000	KRW 5,000,000	KRW 1,000,000 <b>SOLD OUT</b>	KRW 1,000,000 <b>SOLD OUT</b>	KRW 1,000,000
Free Registration	2 Persons	2 Persons	2 Persons	1 Person	X
Horizontal Banner in Keynote Session	O	O	O	O	X
Logo on Program Book, Official Website, E-Newsletter, Screen at Session Room	O	O	O	O	O
Congratulatory Talk	X	X	X	X	X
Video Advertisement on Wide Screen at the Banquet	X	X	X	X	X
Logo Advertisement Above Information Desk	X	X	X	X	X
E-Booth	O	O	O	O	O
Promotion Video on E-Booth	X	X	X	X	X
Logo on Online Conference Site	O	O	O	O	O



## ABOUT SEOUL



Seoul, the capital city of the Republic of Korea, has been the center of the country for the long period of its own history. Now in its 600th year of official history, Seoul is a city where Korea's traditional and modern cultures coexist.

Seoul has full of cultural heritages with unique stories, and you can find traditional architectures in their original forms on one side of the city and ultra-modern buildings on the other, existing in a perfect harmony. The city lies in a natural basin, surrounded by a series of mountains and hills, and its grandeur and magnificent scenic beauty makes the capital, one of the most attractive metropolitan cities of the world. Aside from bustling pace of life and modern architecture, a number of invaluable cultural assets bases their pride on the long history of Seoul.

## VENUE : COEX, SEOUL



COEX, well known for its shopping and cultural diversity, is the heart of international exchange among nations and provides the biggest convention center and exhibition space in Korea. Directly connected to the Samseong Station of subway line 2 and Bongeunsa station of subway line 9, it includes a shopping center, a movie theater, a musical concert hall, exhibition halls and famous restaurants. It is also close to a casino, hotels, department stores, and other various amenities.

## TRANSPORTATION



### [Route 1] Incheon Int'l Airport → COEX

Limousine Bus : no.6703 / no.6006 / no.6103

Subway : Line #9 / Line #2

Taxi : Approximately 100 minutes

### [Route 2] Gimpo Int'l Airport → COEX

Subway : Line #9 (Direct)

Taxi : Approximately 60 minutes

### [Route 3] Seoul Station → COEX

City Bus : no.401

Subway : Line #1 – via Noryangjin St. – Line #9

Taxi : Approximately 40 minutes



# iMiD 2021

*The 21st International Meeting on Information Display*  
**On Leap for Next 20; Breakthrough in Display Technology & Science**

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**August 25-27, 2021 / COEX, Seoul, Korea**

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