

SID VEHICLE DISPLAYS AND INTERFACES 2019

26th ANNUAL SYMPOSIUM & EXPO

PROGRAM

September 24-25, 2019

Burton Manor Conference Center, Livonia, MI

TUESDAY, SEPTEMBER 24, 2019

7:30 – 8:30 am **REGISTRATION AND REFRESHMENTS**

9:00 am – 5:00 pm **TABLETOP EXHIBITS OPEN**

8:35 – 8:45 am **Welcoming Remarks**
Silviu Pala, Automotive Display, Southfield, MI, US

8:45 – 9:30 am **KEYNOTE ADDRESS**
HMI Between Now and Autonomous Drive
Doug Patton, Jupiter Consulting LLC, Novi, MI, US

9:30 – 10:00 am **REFRESHMENT BREAK**

SESSION 1: AUTOMOTIVE MARKET (10:00 – 11:00 am)

Co-Chairs: *Silviu Pala, Automotive Display, Southfield, MI, US*
Michael Boyd, Yazaki North America, Canton, MI, US

10:00 – 10:20 am **INVITED ADDRESS**
1.1 **The Evolution of User Experience and**
In-Vehicle Displays
Kyle Davis, IHS Markit, Southfield, MI, US

10:20 – 10:40 am **INVITED ADDRESS**
1.2 **Automotive Touch Screen, Touchless Control, Micro and mini LED**
and Smart Windows Market Forecast
Jennifer Colegrove, Touch Display Research, Inc., Santa Clara, CA, US

10:40 – 11:00 am **INVITED ADDRESS**
1.3 **Bob O'Brien, President**
Display Supply Chain Consultants, Ann Arbor, MI, US

SESSION 2: EXHIBITOR PRESENTATIONS (11:00 am – 12:45 pm)

Co-Chairs: *Bruce Banter, Tech-D-P Inc., Northville, MI, US*
Eric Miciuda, Continental Corporation, Auburn Hills, MI, US

12:45 – 2:20 pm **LUNCH**

SESSION 3: NEW DISPLAY SOLUTIONS (2:20 – 3:40 pm)

Co-Chairs: David Lambert, *Panasonic, Farmington Hills, MI, US*
Jerzy Kanicki, *University of Michigan, Ann Arbor, MI, US*

2:20 – 2:40 pm **Conformable and Shapeable OLCDS for Automotive:**
3.1 **Enabling a Revolutionary Change in HMI with an**
 Incremental Change in Supply Chain
Simon Jones, *FlexEnable, Cambridge, UK*

2:40 – 3:00 pm **Ambient Contrast Ratio Improvement of Low-Reflection LCD**
3.2 **for Automotive Application**
Lihong Chen, Yaqiong Long, Liting Fang, Binglin Su, Ling Wu,
Poping Shen, *Xiamen Tianma Microelectronics Co., Xiamen, China*

3:00 – 3:20 pm **Transparent Window Displays for Next-Generation Vehicles:**
3.3 **Solving Challenges and Design Considerations**
Jason Thompson, Ross Schneider, Sam Martin, Daisuke Nakajima,
Kazuhiro Tomura, *Texas Instruments, Inc., Dallas, TX, US*

3:20 – 3:40 pm **High-Transparency Borderless Active-Matrix MicroLED Display**
3.4 Ying-Tsang (Falcon) Liu, Kuan-Yung Liao, Yu-Hung Lai, Yun-Li Li,
PlayNitride Inc, Hsinchu, Taiwan

3:40 – 4:00 pm **REFRESHMENT BREAK**

SESSION 4: HUDs (4:00 pm – 5:00 pm)

Co-Chairs: Ross Maunders, *FCA US LLC, Auburn Hills, MI, US*
Dan Cashen, *Continental Automotive Group, Auburn Hills, MI, US*

4:00 – 4:20 pm **Augmented-Reality Human-Machine Interface:**
4.1 **Defining the HUD Eye Box**
Dan Cashen, Esaias Pech,
Continental Automotive Group, Auburn Hills, MI, US

4:20 – 4:40 pm **Cold-Mirror Reflective Polarizer Film Stray-Light Considerations in**
4.2 **HUD Applications**
William Diepholz, John VanDerlofske, Steve Pankratz,
3M, St. Paul, MN, US

4:40 – 5:00 pm **Consideration of Cognitive Tunneling with Augmented-Reality**
4.3 **Head-Up Displays**
Joseph Pullukat, *N.S. International, Troy, MI, US*

5:00 – 5:45 pm

**TUTORIAL on What Do Today's Driver Assistance Systems
Suggest About the Future of Vehicle Displays?**

Bryan Reimer, Ph.D., MIT AgeLab, Cambridge, MA, US

6:00 – 9:00 pm

OPTIONAL DINNER AT BURTON MANOR

Additional Charge (See Registration Form)

WEDNESDAY, SEPTEMBER 25, 2019

7:30 – 8:00 am **REGISTRATION AND REFRESHMENTS**

9:00 am – 2:00 pm **TABLETOP EXHIBITS OPEN**

8:00 – 8:15 am **Local SID Chapter Awards**

Bob O'Brien, *Display Supply Chain Consultants, Ann Arbor, MI, US*
Silviu Pala, *Automotive Display, Southfield, MI, US*

SESSION 5: DISPLAY METROLOGY (8:15 – 9:55 am)

Co-Chairs: Kimberly Peiler, *OSRAM Opto Semiconductors, Inc., Novi, MI, US*
Vyacheslav Birman, *Continental Corporation, Auburn Hills, MI, US*

8:15 – 8:35 am **High-Resolution Characterization of Near-Infrared Light Sources
5.1 for 3D Sensing Applications**

Pierre Boher, Thierry Leroux, *ELDIM, Herouville St. Clair, France*

8:35 – 8:55 am **Physico-Realistic Ray-Tracing Simulation of an Automotive Display
5.2 Inside a Vehicle**

Pierre Boher, Thomas Muller, Philippe Porral, Thierry Leroux,
ELDIM, Herouville St. Clair, France

8:55 – 9:15 am **Comparison of Visual Appearance and Checkerboard Contrast
5.3 Ratio Measurements of High-Contrast Displays**

Hao Wang, Vyacheslav Birman, *Continental AG, Auburn Hills, MI, US*

9:15 – 9:35 am **End-Of-Line Testing of Recent Display Quality Standards
5.4**

Silke R. Kirchner, Benjamin Kasdorf, Cameron R. Hughes, Nadine
Gotte, *Instrument Systems Optische Messtechnik GmbH, Munich Germany*

9:35 – 9:55 am **Methods for Measuring Curved Displays: Evaluating Approaches
5.5 and System Specifications**

Matt Scholz, *Radiant Vision Systems, Redmond, WA, US*

9:55 – 10:15 am **REFRESHMENT BREAK**

SESSION 6: PANEL DISCUSSION (10:15 – 11:45 am)

Moderator: Silviu Pala, *Automotive Display, Southfield, MI, US*

Camera Monitor Systems or Electronic Mirrors for Future Vehicles

Participants: Members of government, academia, industry

11:45 am – 1:30 pm **LUNCH**

SESSION 7: DISPLAY AND HMI SYSTEMS (1:30 am – 3:00 pm)

Co-Chairs: Bruce Banter, *Tech-D-P Inc., Northville, MI, US*
Drew Harbach, *Peterbilt Motors Denton, TX, US*

1:30 – 1:50 pm **Development of DLP3030-Q1 and DLP553x-Q1 Qualified DMDs for Automotive Applications**
7.1

Michael Douglass, Paul Konrad, *Texas Instruments, Dallas, TX, US*

1:50 – 2:10 pm **Non-Uniformity Correction in Recent Automotive Image-Sticking Evaluation Methods**
7.2

Ingo Rotscholl, Udo Kruger, *TechnoTeam Bildverarbeitung GmbH, Ilmenau, Germany*

2:10 – 2:30 pm **Video Compression: A Vital Requirement for Next-Generation Vehicles**
7.3

Alain Legault, *Hardent, Montreal, Canada*

2:30 – 2:50 pm **Driving Toward Performance Standards in Light Control for Automotive Displays**
7.4

Matt Philippi, *3M, St. Paul, MN, US*

2:50 – 3:10 pm **Responses to Dynamic Peripheral Communication for Automotive Interior Lighting**
7.5

Kimberly Peiler, Johnathan Weiser, John Bullough, Nicholas Skinner, Mark Rea, *Lighting Research Center, Rensselaer, Troy, NY, US*

3:10 – 3:20 pm **REFRESHMENT BREAK**

SESSION 8: MATERIALS I (3:20 pm – 4:40 pm)

Co-Chairs: Kai-Han Chang, *General Motors Global R&D, Pontiac, MI, US*
Mark Larry, *Ford Motor Company, Detroit, MI, US*

3:20 – 3:40 pm **Ambient Condition Processing of Highly Efficient Structural Colors**
8.1

Saurabh Acharya, Chengang Ji, Kaito Yamada, Stephen Maldonaod and L. Jay Guo *University of Michigan, Ann Arbor, MI, US*

3:40 – 4:00 pm **Retained Strength for Auto-Grade Cover Glass**
8.2

Khaled Layouni, Tim Gross, Matt Black, Jason Harris, Jong-Se Park, *Corning, Corning, NY, US*

4:00 – 4:20 pm **Development of Novel LOCA for Automotive, Free-Form, and 2.5D Displays**
8.3
Tomoyuki Toyoda, Jingting Wu, *Dexerials Corporation, Shimotsuke-shi, Japan*

4:20 – 4:40 pm **Anisotropic Nano-Structure Light-Control Film**
8.4
Pei-Hsun Wu, *BenQ Materials, Taoyuan, Taiwan*

4:40 – 5:00 pm **REFRESHMENT BREAK**

SESSION 9: MATERIALS II (5:00 pm – 6:20 pm)

Co-Chairs: Kai-Han Chang, *General Motors Global R&D, Pontiac, MI, US*
Mark Larry, *Ford Motor Company, Detroit, MI, US*

5:00 – 5:20 pm **Smart Switchable Liquid-Crystal Light Window for Automotive Windows**
9.1
Yingfei Jiang, Dengke Yang, *Kent State University, Kent, OH, US*

5:20 – 5:40 pm **High Performance Optically Clear Adhesives for Automotive Display Bonding**
9.2
Ryan Eismín, Shingo Amari, John VanDerlofske, *3M, St. Paul, MN, US*

5:40 – 6:00 pm **Sunlight Resistance of Anti-Reflection Films for Displays on Glossy Piano Black Interior**
9.3
Tadaaki Toyoshima, Jingting Wu, *Dexerials Corporation, Shimotsuke-shi, Japan*

6:00 – 6:20 pm **Functional Film Solutions for Next-Generation Automotive**
9.4
Pei-Hsun Wu, *BenQ Materials, Taoyuan, Taiwan*