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Short Course SC005

Glass-free 3D display

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Tuition Fee: (USD 150)

Course Objective:

Following a massive technological and market upward advancement with glass-assisted 3D display in recent years, 3D display manufacturers and end users are now realistically checking the social and economic impact brought about by 3D display technology. While 3D display is mostly regarded as an additional function of the present flat display, there are signs that they are slowly transforming to a rigid demand for certain applications. It is widely regarded that glass-free 3D display would initiate fresh momentum to the 3D display industry.

This short course will start from an introduction to glass-free 3D display in general and to autostereoscopic display in particular. The participants will be exposed to the principles and techniques of various glass-free displays. With the emphasize on auto-stereoscopy, the main stream technologies, barrier- or lenticular based displays, will be introduced and analyzed comprehensively. The more recent technologies, including back-light illuminating 3D display and hybrid sequential and spatial 3D display, will be presented. We discuss the major constraints of the autostereoscopic display, including the reduced resolution, high crosstalk and restricted viewing volume. In this half day short course, we will present advanced techniques for an auto-stereoscopic display to achieve full or even ultra-high resolution, low crosstalk, large viewing volume and data compatibility with existing video data library. We also discuss the fresh ideas and technologies required to further transforming the 3D display from an additional function to a rigid demand. Future of the glass-free 3D display will be projected. Finally, participants will have an opportunity to attend an auto-stereoscopic display mini-exhibition specially prepared to show the state of the art of glass-free 3D displays, if permitted by the organizer and by lecture facility administrator.

Who Should Attend:

The course is designed for researchers, students, scientists and businessmen interested in 3D display technologies and business opportunities. Interaction between the participants, lecturer and exhibitor during the short course is encouraged.

Course Outline:

1. General introduction to 3D displays
2. Fundamental principles and technical analysis of various autostereoscopic solutions
3. Time sequential autostereoscopic displays and directional backlight
4. High-quality autostereoscopic display with spatial and temporal hybrid control
5. Optimizing autostereoscopic displays with genetic algorithm
6. 3D Interactive systems
7. Technique challenges and market outlook and opportunities.

Instructor(s) Biography:

Jianying Zhou, Ph.D. in physics from Imperial College, London (1988). He joined the State Key Laboratory of Optoelectronic Materials & Technology, Sun Yat-Sen University, Guangzhou, China, in 1988, and has been a Full Professor in physics since 1992. His current research interests include 3-D display, super resolution imaging and ultrafast optoelectronic photonics.

Following scientists will be participating a mini-show for autostereoscopic display specially prepared for the participants:

Dr. Jiahui Wang, Sun Yat-Sen University

Mr. Hang Fan, Sun Yat-Sen University

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