JTHA1.1 • 08:30: Keynote Session III

08:30-10:00

Solid State Lighting: Opportunities and Challenges, Klaus P. Streubel, Osram Licht AG, Germany. LEDs have become the dominating light source in many applications such as mobile devices, displays or laptop computers. They also play a significant role in the area of general lighting. In this presentation we will discuss the success stories of LEDs in lighting, the challenges and the opportunities in future solid state lighting systems.

JTHA1.2 • 09:15

Keynote

Optical Properties of Industrially Mass-produced Crystalline Silicon Solar Cells and Prospects for Improvements, Pietro Altermatt, Yifeng Chen, Yang Yang, Adrian A.V., Pierre J. Verlinden, Hina Solar Limited, China; Department of Physics, GCU, Faisalabad, Pakistan. The optical properties of mass-produced crystalline Si solar cells are reviewed and the requirements and limitations for their improvements by modern optical methods are outlined from the perspective of one of the largest manufacturers.

10:00-10:30 Networking and Coffee Break, Großer Saal

Telemann-Saal

Optical Nanostructures and Advanced Materials for Photovoltaics (PV)

10:30-12:30

PTh2A • Ordered and Disordered Structures for Light Management

President: Ning Dai, Chinese Academy of Sciences, China

PTh2A.1 • 10:39

Invited

Total Absorption in Structured Ultrathin Semiconductor Layers, C. Martin de la M., Bjorn C. Stuhrberg, Teik K. Chong, Du-Yong Cho, Thomas P. White, Lindsay C. Botten, Kakou K. Dossou, Christopher G. Poulton, Kyle R. Carchepole, Ross C. McPhedran; UniSydney, Australia; Australian National University, Australia; University of Technology Sydney, Australia. We show that essentially total absorption can be achieved in ultrathin layers of a modestly absorbing semiconductor using a grating geometry. Fabrication requires standard techniques and structured metal elements are not required.

PTh2A.2 • 11:00

A Green's Function Based Inverse Method to Perceive Gratings that Critically Couple Light into Solar Cells, Aimi Aba, Stefan Naud, Carsten Rockstuhl; Karlsruhe Institute for Technology, Germany. An analytical method for inverse modelling an optimum grating structure that critically couples light into guided modes is developed. This paves the way for inverse modelling optimum surface textures for solar cell absorption enhancement.

PTh2A.3 • 11:15

Absorption Enhancement Using Surface Textures Defined by a Monolayer of Tailored Nanospheres, Stefan Naud, Aimi Aba, Peter Flech, Harald Keeser, N. Spasing, K. Wolf, Carsten Rockstuhl; K. Universitat Stuttgart, Germany;伙伴关系for Materials, Germany. We numerically explore a bottom-up approach using a monolayer of nanoparticles to define an optimum surface texture for light trapping. The impact of nanosphere size distributions on the defined surface's scattering response is studied.

Schiller-Saal

Solid-State Lighting (SSL)

10:30-12:15

STh2B • Flexible OLEDs

President: Jang-Joo Kim, Seoul National Univ., Korea

STh2B.1 • 10:30

Invited

Improving the Efficiency of Flexible Organic Light-emitting Diodes via Alternating High- and Low-Index Layers, Seung-Hyeok Yoo, Jihoon Lee, Se-Hee Han, DaYool Jung, Jongmin Kim, Hong-Kyu Seo, Hyunsoo Cho, Eunhye Kim, Jin-Ouk Song, Hyo Park, Sang-Tae Choi, Taek-Joo Kim, Tae-Woo Lee; Korea Advanced Institute of Science & Technology, Korea; Hanyang University of Science and Technology (POSTECH), Korea; Electronics and Telecommunications Research Institute (ETRI), Korea. We present strategies to increase the efficiency of flexible organic light-emitting diodes using planar high-index and low-index layers sandwiching an ultra-thin transparent electrode such as graphene or metal film.

STh2B.2 • 11:00

ITO-free Flexible Organic Light Emitting Diodes with Enhanced Light Outcoupling, Kyung Min Lee, Romain Fardell, Tae-Wook Koh, Joshua Spechtner, Jake Herb, Craig Arnold, Barry P. Rand; Princeton University, USA. We introduce flexible organic light-emitting diodes on silver nanowire substrates with enhanced light outcoupling through the use of porous polyimide (P-P) films. The P-P extracts substrate and waveguide losses without electrical alteration.

STh2B.3 • 11:15

Flexible Organic Light-emitting Diodes with Novel Transparent Electrodes, Jiacheng Tang, Soochow Univ., China. We present highly power-efficient flexible organic light-emitting diodes by combining nanostructured metallic transparent conductor on plastic substrates, leading to a power efficiency over 160 mW.
CONFERENCE PROGRAM

OSA®
Light, Energy and the Environment Congress

TOPICAL MEETINGS
Fourier Transform Spectroscopy
Hyperspectral Imaging and Sounding of the Environment
Optical Instrumentation for Energy & Environmental Applications
Optical Nanostructures and Advanced Materials for Photovoltaics
Optics for Solar Energy
Solid-State Lighting

14 – 17 November 2016
Kongresshalle am Zoo Leipzig
Leipzig, Germany

See osa.org/EnergyOPC for complete information