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Title:

Polarized Photoluminescence from Structured Nanoparticles

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Abstract:

Quantum dots efficiently transform blue photons into green or red photons by photoluminescence in quantum dot LED TVs. For spherical quantum dots, the absorption and emission are independent of the polarization of the photons. For semiconductor nanoparticles with other shapes, the absorption depends on the polarization of the incident blue photons and the emitted light can become polarized. In this presentation it is explained how photoluminescent nanoparticles can be used to generate a backlight that emits linearly polarized light. By giving the semiconductor nanoparticles a particular shape, the anisotropy of absorption and emission can be independently tuned.

About the speaker:

Kristiaan Neyts is full professor at Ghent University in the Electronics and Information Systems department of the Faculty of Engineering Sciences and Architecture. He obtained his PhD in 1992 at UGent on thin film electroluminescence and made a post-doc at UC Berkeley in 1997-1998. Since 2004 he is heading the Liquid Crystals and Photonics group that is conducting research in the fields of liquid crystals, PZT, OLEDs, electrophoresis, solar cells and microscopy. This group of 25 researchers has expertise in device technology, numerical simulations and electro-optical characterization of photonic components. He is the promoter of 27 completed PhDs, co-author of 257 SCI papers and co-inventor of 6 granted patents.