Vortragsankündigung

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Seminarraum I (JAK2AOG1.33), Jakob-Haringer-Straße 2a

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"Down Conversion Materials for LED Based Solid-State Lighting"

Phosphor-converted white light-emitting diodes (pc-WLEDs) have received considerable attention because of their potential applications in solid-state lighting. For indoor lighting applications, the luminaires have to fulfil several requirements: a colour rendering index (CRI) higher than 90, a correlated color temperature (CCT) between 3000 and 4000 K and a luminous efficacy superior to 150 lumens per watt. Typical pc-WLEDs consist of a 460 nm InGaN blue LED chip combined to Ce-doped lanthanide aluminates embedded into a polymer matrix. The luminescent composite is able to efficiently convert the blue light from the chip into a very broad yellow emission band for producing white light. In order to increase the CRI value and tune the CCT one, a second inorganic phosphor emitting a red light upon 460 nm excitation is generally added. These different cases will be addressed in this talk with samples prepared by our group. In particular, two families of down conversion materials have been investigated, inorganic phosphors and quantum dots. New strategies based on the combination of blue and near-UV LEDs to design smart lighting devices will be also presented.