



第132回 OPERA研究交流セミナー

第124回 ISIT有機光エレクトロニクス研究特別室セミナー

第191回 未来化学創造センターセミナー



日時: 2015年10月15日(木) 15:00~

場所:九州大学 共進化社会システムイノベーション施設 2F大会議室

Fabrication of micro-/nano-structured transparent electrodes and their applications on enhancing light extraction of OLEDs

Chien-Yu Chen

Graduate Institute of Photonics and Optoelectronics and Innovative Photonics Advanced Research Center (i-PARC)
National Taiwan University, Taipei, Taiwan

Organic light-emitting devices (OLEDs) have posed as promising candidates for the next-generation display and lighting technologies with their various merits. Internal quantum efficiency η_{IQE} of OLEDs can now approach nearly 100% due to development of effective triplet-harvesting mechanisms, such as electrophosphorescence and thermally activated delayed fluorescence. However, the external quantum efficiency η_{EQE} of OLEDs is still limited by the optical confinement caused by higher refractive indices of substrate, organic materials and transparent conducting oxide (TCO), which result in total internal reflection and lower light extraction. In this presentation, I will discuss our studies on composite transparent electrodes that are composed of ITO micromesh/nanomesh and conducting polymers. Theoretical and experimental studies show that these micro-/nano-structured composite transparent electrodes effectively enhance light coupling of OLED internal radiation into the substrate, in addition to functioning as current conductor/injector. When combining such internal extraction structures and external extraction schemes, very high EQEs (>60%) were demonstrated with green phosphorescent OLEDs.

主催:九州大学 最先端有機光エレクトロニクス研究センター
:財団法人九州先端科学技術研究所(ISIT)
共催:九州大学 未来化学創造センター