Motivation

OLEDs have been applied in numerous applications such as displays and luminaires. Yet the external quantum efficiency (EQE) of OLED has been limited around 20% due to the light trapping and absorption in the layered structures. Hence, for achieving a higher EQE level, light out-coupling has attracted tremendous attention both in the academic and industry world, especially in the flexible devices, which appropriate for display, sensors and IoT applications.

Task

The work will focus on improving the EQE of the OLED by optimizing the light out-coupling layer, which fabricated under the plasma treatment. While the device is fabricated on polymer substrate, the student will start with the optimization of the plasma parameter for surface nano-structuring and followed by the optimization of light out-coupling including the planarization layers. Characterization of layer properties by AFM and spectrometer need to be performed afterwards.

Prerequisites

Prerequisite for the work is independent experimental work, team spirit as well as interest in innovations. Masters student in Optics, Material Science, Chemistry and Physics or related disciplines are proper candidates for the work. Experience and knowledge of AFM, UV/VIS/NIR spectrometer, Labview are desired.