

# Highly efficient non-doped fluorescent OLEDs based on aggregation-induced emission emitters

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Chromophore aggregation generally quenches light emission due to strong intermolecular  $\pi$ - $\pi$  interaction, a notorious effect known as aggregation-caused quenching (ACQ); as a result, many highly efficient organic dyes such as C545T, DCJTB should be doped into the host to alleviate the ACQ effect. However, the fabrication of OLEDs with doped layers is complex and thus it is desirable to develop non-doped OLEDs with high efficiency.

In this talk, a series of highly efficient non-doped fluorescent OLEDs with newly synthesized tetraphenylethylene (TPE) derivatives as emitters will be present. The TPE derivatives show aggregation-induced emission (AIE) characteristics, i.e., there are non-emissive in dilute solution but emit intensely in the aggregation state. Sky blue OLEDs based on TTPEPy show a maximum current efficiency of 12 cd/A and external quantum efficiency of 5%, approaching the limit of possible. Green OLEDs with 2ATPE as hole-transporting and light-emitting layer demonstrate a maximum current efficiency of 12 cd/A and external quantum efficiency of 3.5%. These highly efficient AIE emitters also exhibit good thermal stability, and thus good device stability may be expected. Further investigation is in process.

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