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Enhancing Operational Stability of OLEDs Based on Subatomic Modified Thermally Activated Delayed Fluorescence Compounds

by

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Place: Rm G26, Science Centre North Block, CUHK

ALL INTERESTED ARE WELCOME

Abstract

Realizing operationally stable blue organic light-emitting diodes is a challenging issue across the field. While device optimization has focused on effectively prolonging device lifetime, strategies based on molecular engineering of chemical structures, particularly at the subatomic level, still need to be developed. Herein, we explore the effect of targeted deuteration on pincer, donor, and acceptor units of thermally activated delayed fluorescence (TADF) and multiple-resonance TADF emitters. We also investigate the structure-property relationship between intrinsic molecular stability, based on isotopic effect, and device operational stability. We found that OLED's operational stability depends on the degree of deuteration.

Biography

Dr. Kobe Man Chung obtained his BSc (2006) degree at the City University of Hong Kong and PhD (2015) at The University of Hong Kong. His PhD work centered on designing luminescent transition metal complexes and thermally activated delayed fluorescence materials and their application in OLED applications. From 2015 to 2021, he worked as a Postdoctoral Research Fellow in the research groups of Prof Vivian Yam at the University of Hong Kong. Dr. Tang joined the Institute of Materials Research, Tsinghua University, as Assistant Professor in 2021 and became Associate Professor in 2024. He published over 60 research articles and filed 20 patents in optoelectronics. He also serves as a reviewer for Nature Communications, Chemical Science, Molecules, and Luminescence.

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