

The collaboration research for the Dual Graduate School between VNU and JAIST

[Title of collaboration research]:

Highly efficient and stable organic light emitting diodes

[The members of collaboration research]:

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[Reference home-page address]: <http://www.jaist.ac.jp/ms/labs/murata/index.html>

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Organic light-emitting devices (OLEDs) are attractive for display applications. The efficiency and reliability of OLEDs have improved significantly over the years since Tang reported the efficient OLEDs based on tris (8-hydroxyquinoline) aluminum (Alq_3)

as an emitting material. However, their operation lifetimes, thousands of hours for half-life, are sufficient only for a limited range of applications.

Degradation in OLEDs essentially appears in the form of a decrease in luminance in time. The degradation phenomena in OLEDs can be classified

in three modes; dark-spot formation, catastrophic failure, and intrinsic degradation. Among these modes, the intrinsic degradation, where the brightness of the emissive area of a device gradually decreases without any obvious change in device appearance, is the largest obstacle to be overcome for further expansion of application range of OLEDs.

In this research, I would like to focus on the mechanisms governing intrinsic degradation of OLED. In particular, I would like to delineate the mechanism of stability enhancement by doping of fluorescent dyes.

