**Lifetime extension of the TADF devices by sensitization approach**

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**Abstract**  
The device lifetime of the thermally activated delayed fluorescence (TADF) organic light-emitting diodes is still short for commercial application. Several approaches have been tried to extend the device lifetime of the TADF organic light-emitting diodes. One of the effective strategies to improve the device lifetime of the TADF devices is to sensitize the TADF emission using a TADF or phosphor sensitizer. The sensitization method is to harvest the singlet excitons of the TADF emitter by suppressing triplet exciton formation in the TADF emitter. In our approach to improve the device lifetime, we used a narrow-emitting TADF emitter and sensitized the TADF emission using an imidazole ligand derived phosphor and a triazine derived TADF material. As a result, the device lifetime was significantly improved while enhancing the external quantum efficiency and color purity of the blue TADF devices.

![Emission mechanism of the TADF sensitized TADF devices.](image)

Figure 1. Emission mechanism of the TADF sensitized TADF devices.