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Benzoisoquinoline-1,3-dione acceptor based red thermally activated delayed fluorescent emitters

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Abstract

A strong electron deficient moiety, benzoisoquinoline-1,3-dione, was applied as an electron acceptor of donor-acceptor type thermally activated delayed fluorescent (TADF) emitters. The connection of the benzoisoquinoline-1,3-dione acceptor moiety with a dimethylacridine donor moiety prepared 6-(9,9-dimethylacridin-10(9H)-yl)-2-phenyl-1H-benzo[de]isoquinoline-1,3(2H)-dione and 5-(9,9-dimethylacridin-10(9H)-yl)-2-phenyl-1H-benzo[de]isoquinoline-1,3(2H)-dione as red TADF emitters by strong electron deficiency of the benzoisoquinoline-1,3-dione acceptor. Device optimization of the red TADF emitters based on the delayed fluorescent behaviour of the red TADF emitters could offer high quantum efficiency of 11.2% in the red TADF devices.

Key words : red device, delayed fluorescence, quantum efficiency, benzoisoquinoline-1,3-dione

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