

Quinoxaline-Based TADF Emitters and Their Mixtures with Fluorophores for OLED Applications

About the technology

The invention concerns novel triarylamine derivatives of quinoxaline exhibiting thermally activated delayed fluorescence (TADF), including compounds containing heavy atoms, as well as methods for their synthesis.

The developed emitters demonstrate improved spectral and photophysical properties and enable efficient conversion of triplet excitons into singlet excitons, supporting highly efficient light emission. Depending on their molecular structure, the compounds can emit in the orange, red and near-infrared (NIR) spectral ranges.

A particularly promising aspect of the invention is the use of the developed TADF emitters in combination with fluorescent dopants. Such mixtures can provide narrowband NIR emission while maintaining fast triplet-to-singlet exciton conversion, offering a route toward high-efficiency and high-colour-purity optoelectronic devices.

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Key advantages

- efficient harvesting of triplet excitons through the TADF mechanism,
- potential for high internal quantum efficiency,



- emission in the orange, red and NIR spectral ranges,
- possibility of obtaining narrowband emission through combination with fluorophores,
- improved spectral and photophysical parameters compared with previously reported analogues,
- potential use both as direct emitters and assistant dopants in optoelectronic devices.

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Intellectual Property

- European patent application: EP23175917

Cooperation opportunities

- Licensing
- acquisition of intellectual property rights
- joint R&D
- further technology development and commercialization