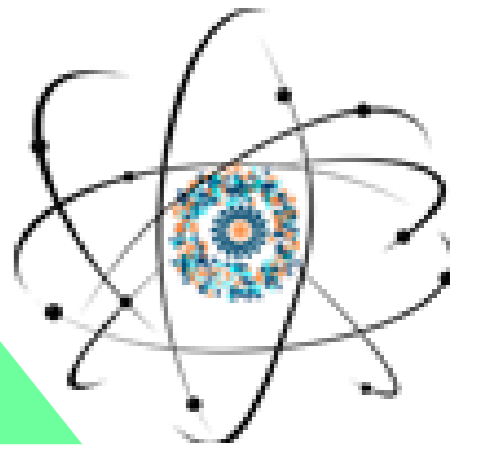


(Tetrafluorovinylphenyl)carbazole as a Multifunctional Material for OLED Applications



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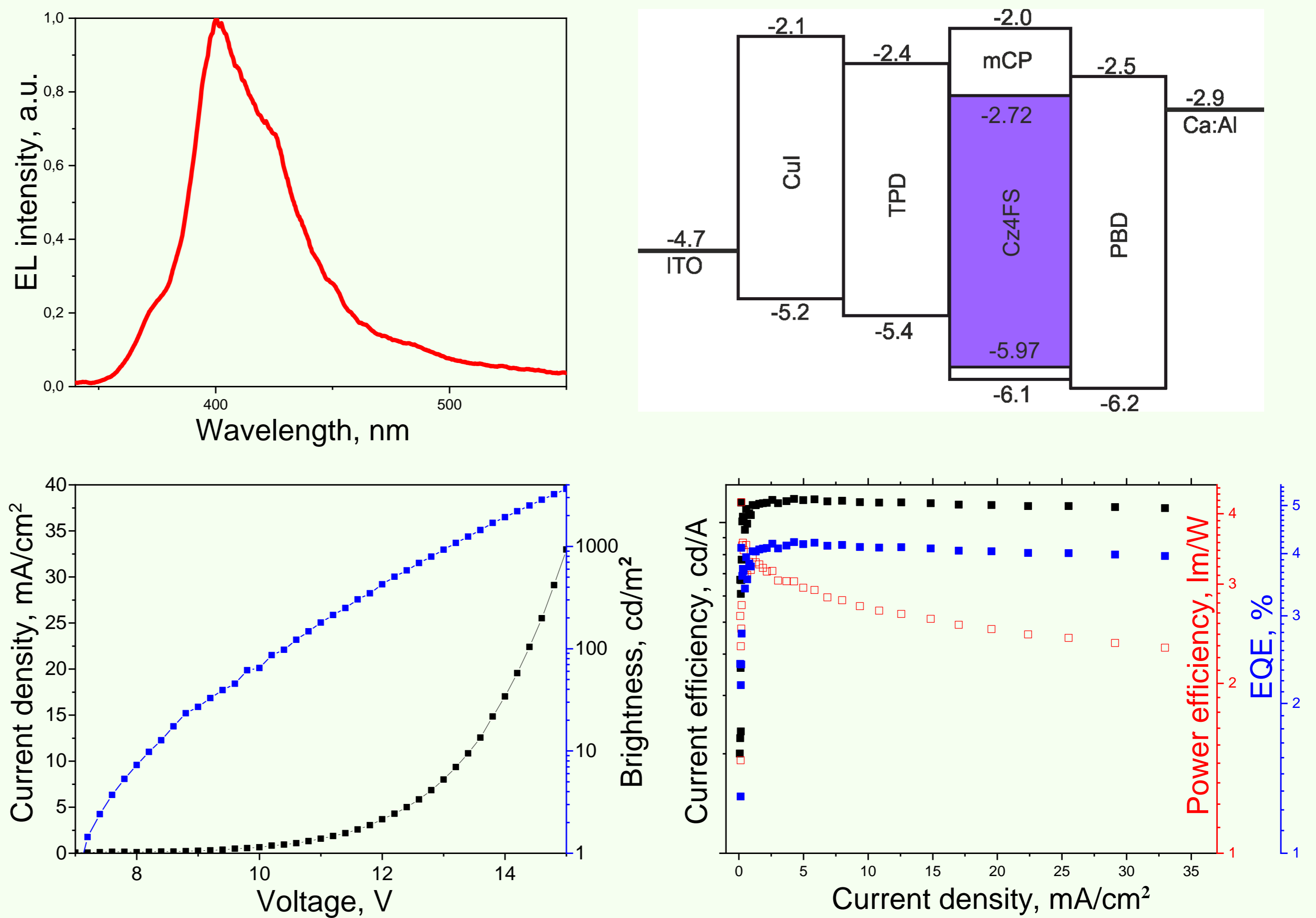
Abstract

The multifunctional materials for application in organic light emitting devices (OLEDs) based on a single structural motif are very desired but quite rare species. Such structures allow to simplify the chemical variety within OLED heterostructures and thus reduces their cost, manufacturing time and logistic efforts. In this poster, we report the 9-(2,3,5,6-tetrafluoro-4-vinylphenyl)carbazole molecule (Cz4FS) utilized as a fluorescent emitter, host material for quantum dot based OLEDs (QLEDs), acceptor part of exciplex active layer, monomer which can be used for the preparation of emissive polymer and co-polymer.

Figure 1.

- Energy level diagrams of device A;
- the corresponding normalized electroluminescence spectrum as well as brightness/current density-voltage;
- current efficiency/power efficiency/EQE-current density characteristics.

Fabrication and characterization of host-containing OLED



Fabrication and characterization of exciplex OLED

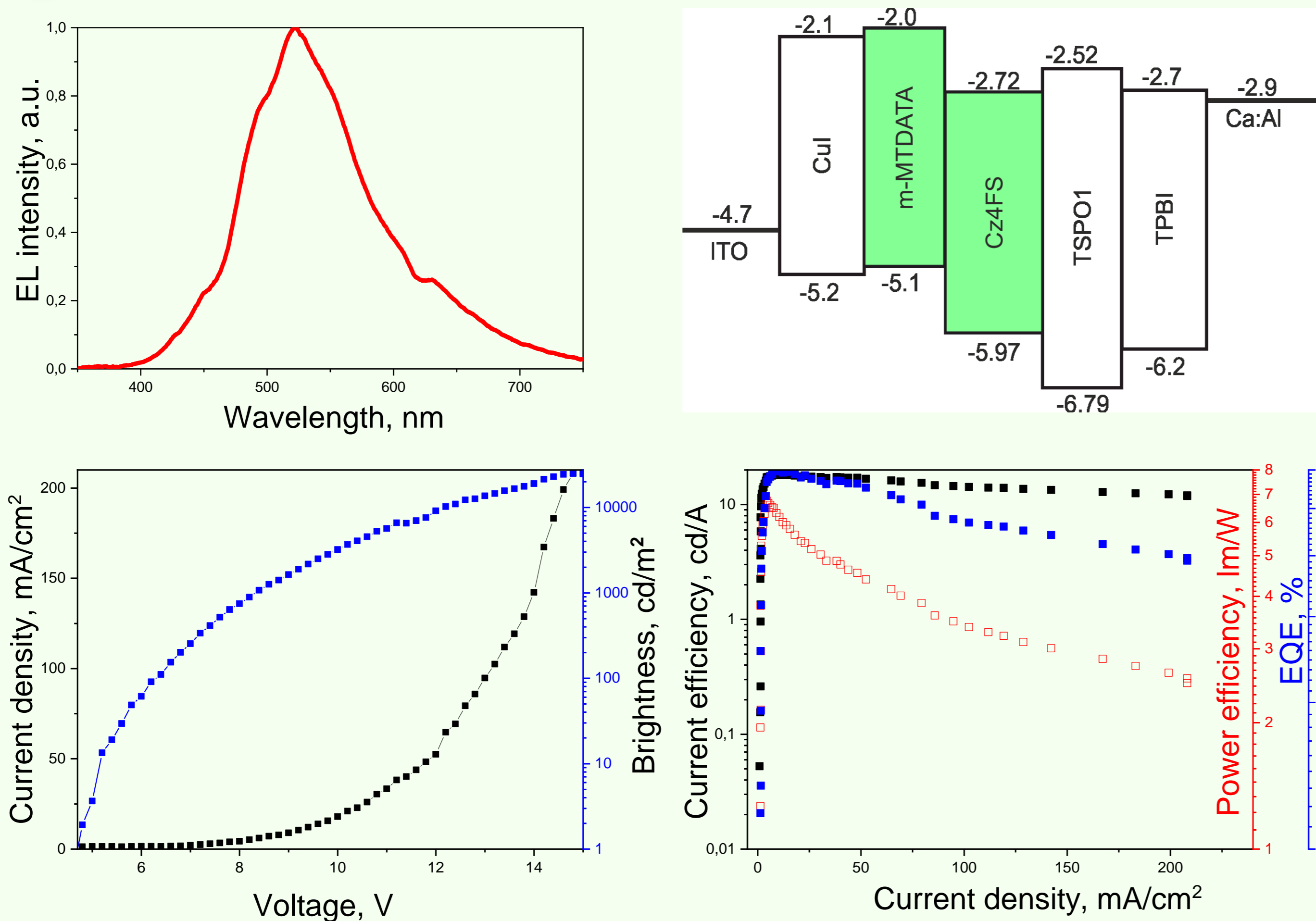


Figure 2.

- Energy level diagrams of device B;
- the corresponding normalized electroluminescence spectrum as well as brightness/current density-voltage;
- current efficiency/power efficiency/EQE-current density characteristics.

Conclusions

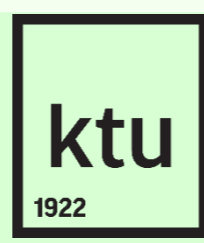
- We designed and characterized OLEDs in which Cz4FS played the role of guest emitter (Device A), acceptor part of exciplex emitter (Device B).
- Devices are characterized by common values of external quantum efficiency as for purely fluorescent OLEDs (up to theoretical limit of 5%), but these devices sustain low efficiency roll-off of electroluminescence in wide range of current densities.
- Prohibiting of the mutual rotation of donor and acceptor fragments of Cz4FS by chemical tuning or by conformational restrictions taking place in the solid state are prioritized for the enhancement of luminescence quantum yield of Cz4FS and lighting characteristics of the devices utilized Cz4FS as emitter.

Acknowledgments

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Heavy metal free emitters for
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