

Ambipolar Organic Semiconductor: CZBDF

-Organic material with well-balanced high hole and electron mobility-



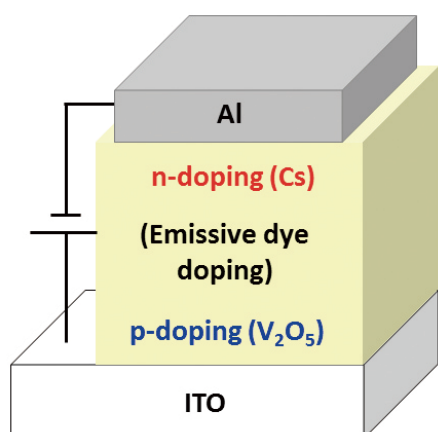
CZBDF
200mg
[C2780]

Advantages

- Well-balanced high hole and electron mobility (Hole: $3.7 \times 10^{-3} \text{ cm}^2/\text{Vs}$, Electron: $4.4 \times 10^{-3} \text{ cm}^2/\text{Vs}$; Amorphous, TOF technique)
- High glass-transition temperature ($T_g = 162 \text{ }^\circ\text{C}$)
- Wide band gap (3.3 eV)
- Serves as a host material for fluorescent and red phosphorescent dopants.

Application

Host material for homojunction OLED



Single matrix of CZBDF

EQE: up to 4.2% (C545T as an emission dopant)

Reference H. Tsuji, C. Mitsui, Y. Sato, E. Nakamura, *Adv. Mater.* **2009**, *21*, 3776. DOI: <https://doi.org/10.1002/adma.200900634>

Related Products

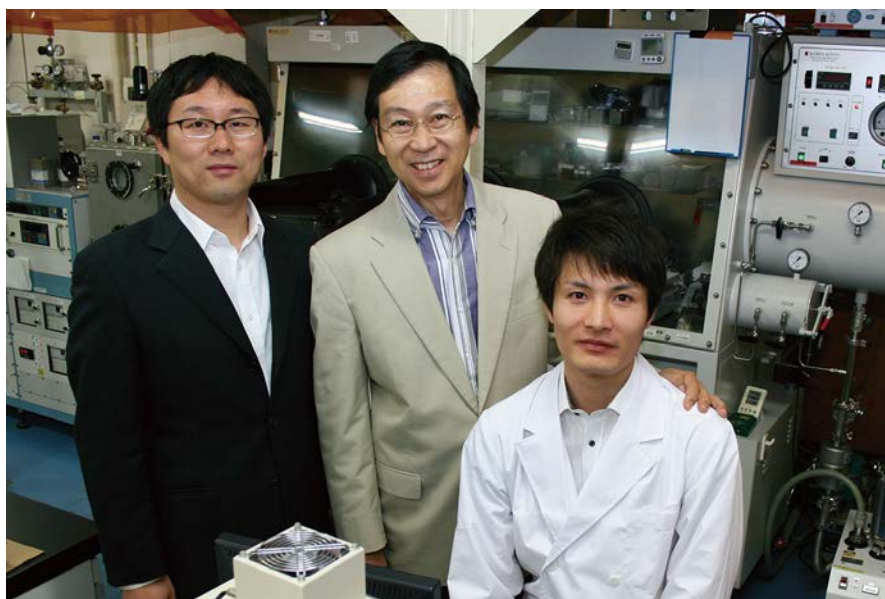
Coumarin 545T (= C545T)	200mg [B4257]
2,5,8,11-Tetra-tert-butylperylene (= TBP)	100mg [T3053]
Rubrene (purified by sublimation)	250mg / 1g [T2233]
Ir(piq)₃ (purified by sublimation)	100mg [T2685]
Alq₃ (purified by sublimation)	5g [T2238]
N,N'-Di-1-naphthyl-N,N'-diphenylbenzidine (= α-NPD) (purified by sublimation)	1g / 5g [D3970]

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Introduction of the researcher

Physical Organic Chemistry Laboratory (Nakamura Group), Department of Chemistry, University of Tokyo

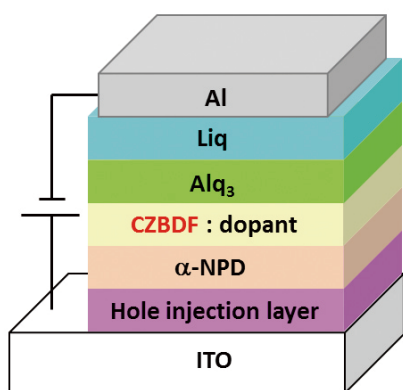


From left: Associate Prof. Dr. Hayato Tsuji, Prof. Dr. Eiichi Nakamura, Dr. Chikahiko Mitsui

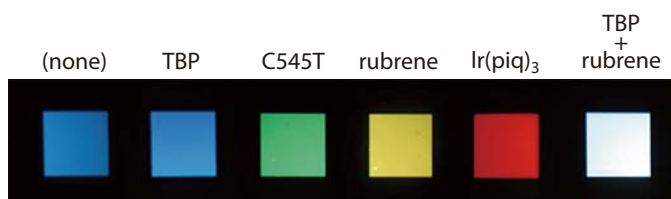
Contents of the research

The Nakamura group has pioneered organic chemistry spreading to various research fields based on their manufacturing by synthetic organic chemistry. Their studies involve development of a C-H activation reaction using an iron catalyst, organic electronics materials useful for organic solar cells, organic light-emitting diodes (OLED) and molecular transistors as well. They also research on a novel cure method by introducing a gene. Recently, their study on an electron microscope enabled us to directly observe various motions and crystal growths of individual molecules.

Host material for heterojunction OLED



dopant :



Full-color emission using CZBDF as a host material

Reference C. Mitsui, H. Tsuji, Y. Sato, E. Nakamura, *Chem. Asian J.* **2012**, 7, 1443. DOI: <https://doi.org/10.1002/asia.201200062>

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OLED



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