Ambipolar Organic Semiconductor: CZBDF

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

**Advantages**

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

**Application**

Host material for homojunction OLED


**Related Reagents**

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2780</td>
<td>CZBDF</td>
<td>200mg</td>
</tr>
<tr>
<td>B4257</td>
<td>Coumarin 545T (= C545T)</td>
<td>200mg</td>
</tr>
<tr>
<td>T3053</td>
<td>2,5,8,11-Tetra-tert-butylperylene (= TBP)</td>
<td>100mg</td>
</tr>
<tr>
<td>T2233</td>
<td>Rubrene (purified by sublimation)</td>
<td>250mg / 1g</td>
</tr>
<tr>
<td>T2685</td>
<td>Ir(piq)$_3$ (purified by sublimation)</td>
<td>100mg</td>
</tr>
<tr>
<td>T2238</td>
<td>Alq$_3$ (purified by sublimation)</td>
<td>5g</td>
</tr>
<tr>
<td>D3970</td>
<td>$N,N'$-Di-1-naphthyl-$N,N'$-diphenylbenzidine (= α-NPD) (purified by sublimation)</td>
<td>1g / 5g</td>
</tr>
</tbody>
</table>
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-Organic material with well-balanced high hole and electron mobility-

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

Full-color emission using CZBDF as a host material