Organic field-effect transistors (OFETs) have been good attentions as mechanically flexible and lightweight materials. Printed flexible devices for active layer made from organic semiconductor materials can be manufactured by means of low-cost and environment-friendly coating processes, and are particularly expected as next-generation electronics.

A newly line-up of highly soluble p-type semiconductor materials with high hole mobility is available from FUJIFILM Wako. These products are new materials developed by the joint research with Prof. Dr. Takeya and Assoc. Prof. Dr. Okamoto of The University of Tokyo and FUJIFILM Corporation.

### Features

- **High hole mobility**: The hall mobility is over 5 cm²/Vs.
- **High heat resistance**: The products do not deteriorate even when used at the temperature required for OSC patterning.
- **High solubility**: Solubility in toluene : 0.5 wt%
- **High repeatability**: Good repeatability was confirmed in the characterization of the transistor by Pi-Crystal, Inc.
- **Sublimated products**: The purity of over 99% is guaranteed

### Summary of various transistor element characteristics

<table>
<thead>
<tr>
<th>Film production method</th>
<th>Substrate temperature (°C)</th>
<th>$\mu_{max}$ (cm²/Vs)$^a$</th>
<th>$V_{th}$ (V)$^a$</th>
<th>$I_{on}/I_{off}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drop-casting</td>
<td>40</td>
<td>4.0</td>
<td>-21 to -37</td>
<td>$10^6$</td>
</tr>
<tr>
<td>Edge-casting</td>
<td>40</td>
<td>6.2</td>
<td>-15 to -20</td>
<td>$10^6$</td>
</tr>
<tr>
<td>Vacuum deposition</td>
<td>60</td>
<td>1.8</td>
<td>-15 to -20</td>
<td>$10^6$</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>1.0</td>
<td>-15 to -20</td>
<td>$10^6$</td>
</tr>
</tbody>
</table>

a) Evaluated in the saturation region. b) The gate insulator is SiO₂ with a thickness of 200 nm.

### Product list

<table>
<thead>
<tr>
<th>Product Number</th>
<th>Product Name</th>
<th>Package Size</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>208-20821</td>
<td>TBBT-C₄</td>
<td>100mg</td>
<td>List Price 750.00 USD</td>
</tr>
<tr>
<td>205-20831</td>
<td>TBBT-C₁₀</td>
<td>100mg</td>
<td>List Price 750.00 USD</td>
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</tbody>
</table>

### References

Crystal film fabrication by edge casting method and transistor characterization evaluation

### Coating film formation conditions

**TBBT-C₄**
- **Solvent:** Toluene
- **Concentration:** 0.05 wt%
- **Melted temperature:** 60°C
- **Hot plate temperature:** 50°C
- **Substrate:** SiO₂ 200nm
- **SAM:** β-PTS
- **Drop amount:** 1 drop
- **Drying:** Under pressure, 50 °C, 8 h

**TBBT-C₁₀**
- **Solvent:** Anisole
- **Concentration:** 0.05 wt%
- **Melted temperature:** 70°C
- **Hot plate temperature:** 40°C
- **Substrate:** SiO₂ 200nm
- **SAM:** β-PTS
- **Drop amount:** 1 drop
- **Drying:** Under pressure, 70 °C, 24 h

### Graphs

- **Sat. VD = -50 V**
  - **V_{TH}:** -14 V
  - **Mobility:** 3.5 cm²/Vs

- **Output**
  - **VG:** From -1.3e- 3 V

- **Sat. VD = -50 V**
  - **V_{TH}:** -27 V
  - **Mobility:** 6.5 cm²/Vs

- **Output**
  - **VG:** From 1.6e- 3 V
<table>
<thead>
<tr>
<th>Product Number</th>
<th>Product Name</th>
<th>Package Size</th>
<th>Price</th>
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<tbody>
<tr>
<td>204-20801</td>
<td>TBBT-H₂</td>
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<td>201-20811</td>
<td>TBBT-Br₂</td>
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