OLEDs have great potential for large, diffuse light sources.

Global market for OLED lighting set to take off. Projection for 2023 is $6.7B (ElectroniCast, 2016)

CDT and Sumitomo are developing materials and manufacturing capability for low cost, large area OLED lighting.

Technology Development General Lighting

- Base materials development focussed on improving efficiency and lifetime.
  - 3000K to 5000K white with high CRI.
  - Fully printable research materials performance up to 20kh T70 from 1 kcdm\(^2\).
- Low cost structure and manufacturing: plastic substrate and ITO-free anode.
- Developed scalable process for in-line large printing and drying of all organic layers.
  - Slot Die Coating (SDC) or Ink Jet Printing.
- High efficiency enabled by proprietary solution processable optical outcoupling technologies.

Fully Flexible High Efficiency Solution Processable Device

<table>
<thead>
<tr>
<th>Base device on glass</th>
<th>1.9 x efficiency gain from proprietary R2R compatible outcoupling technology</th>
<th>Flexible Substrate, 2800K 80CRI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lm/W</td>
<td>V</td>
<td>Lm/W</td>
</tr>
<tr>
<td>41</td>
<td>3.8</td>
<td>79</td>
</tr>
</tbody>
</table>

All measurements at 1000 cd/m\(^2\)

*Developed as part of a collaborative UK R&D project, part funded by the UK Government’s Technology Strategy Board (TSB)*
Large Area and Decorative OLED Lighting

Decorative Lighting
- Customisable single and dual coloured tiles available → may be patterned.
- OLEDs can be made on plastic, giving flexible form factor and shape variations on very thin substrates.
- Gently diffused light – emitting no harsh glare or UV radiation.
- Applications include: room and car interiors, displays for the hospitality industry, niche lighting for sensitive objects in museums and phototherapy.

Technology Development
- We can supply demonstrators for interested customers and end-users.
- Colour and design of tiles is customisable. Current active area is 94 x 94mm.
- Lower cost production process can be achieved with lower efficiency and/or lifetime requirements.
- OLED Cosmos tiles for sale by Sumitomo: prices available on request.
- Large range of potential applications, complementary to incumbent lighting technologies.

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