

Large Area and Decorative OLED Lighting

General Lighting Technology

- 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.

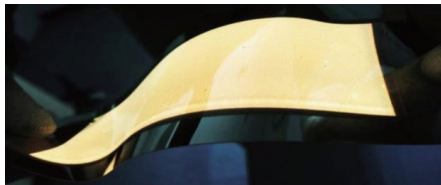
▶ 150mm (6 inch) Concept Installation*



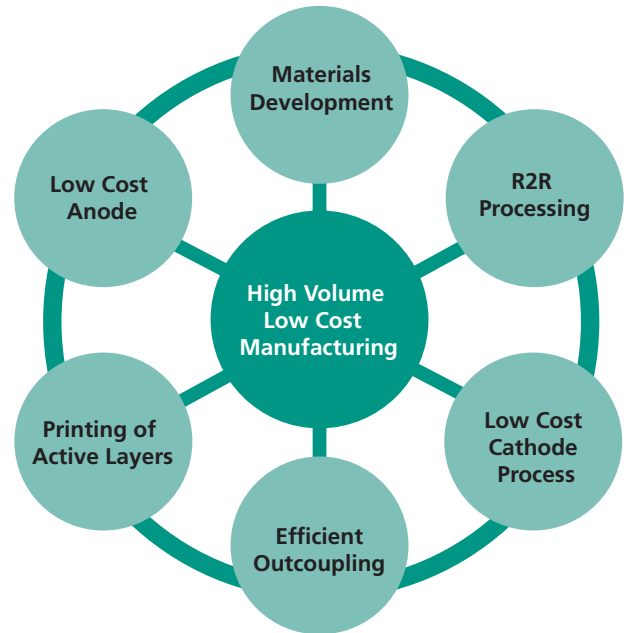
▶ Technology Demonstration



Variety of shapes and sizes



150 mm wide fully flexible 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

Base device on glass		1.9 x efficiency gain from proprietary R2R compatible outcoupling technology	Flexible Substrate, 2800K 80CRI		
Lm/W	V		Lm/W	V	T70
41	3.8		79	3.5	8500 h

All measurements at 1000 cd/m²

* Developed as part of a collaborative UK R&D project, part funded by the UK Government's Technology Strategy Board (TSB)

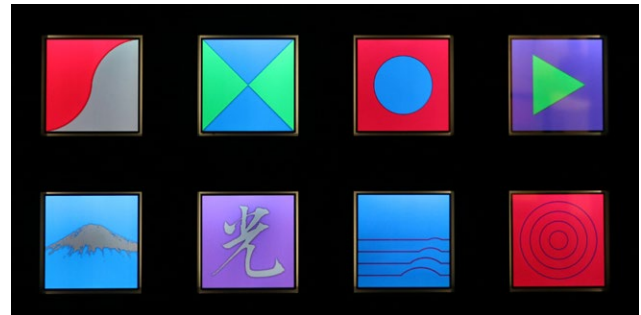
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Decorative Lighting

- 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 Demonstration

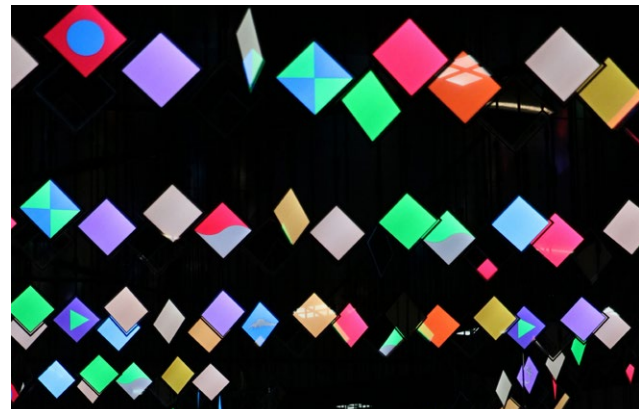
109mm x 109mm coloured Tiles



2" Inkjet printed on a flexible substrate



OLED COSMOS (Sumitomo Chemical)



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.