



OLED Materials

OLED材料



Background 来历

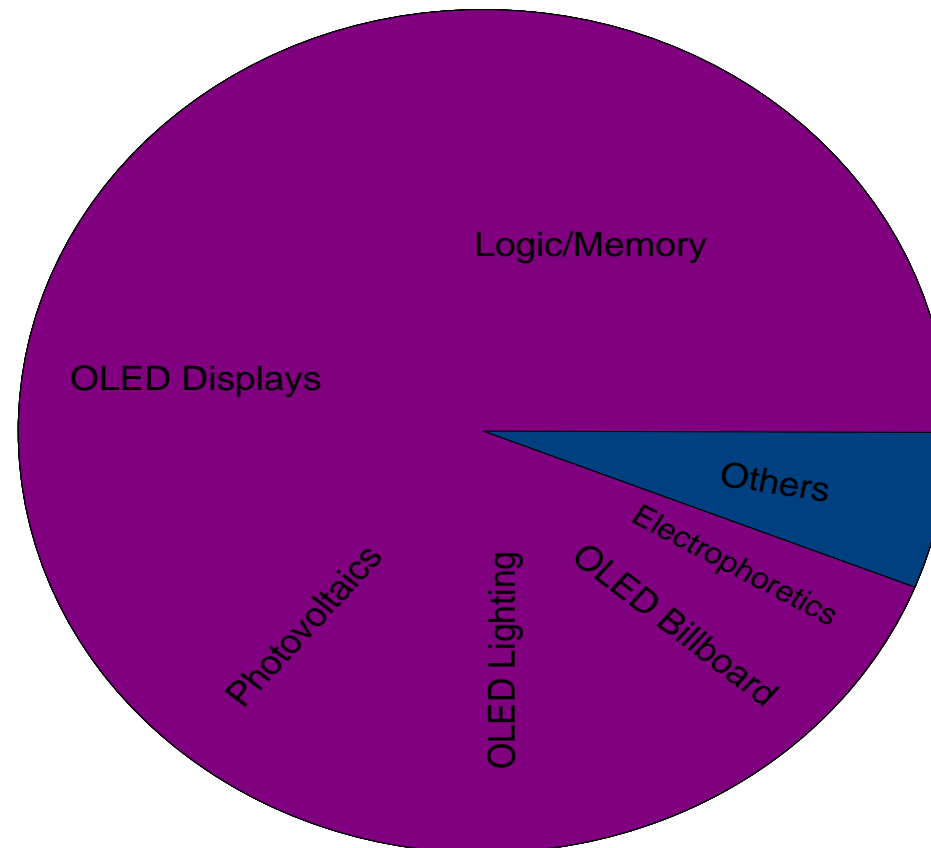
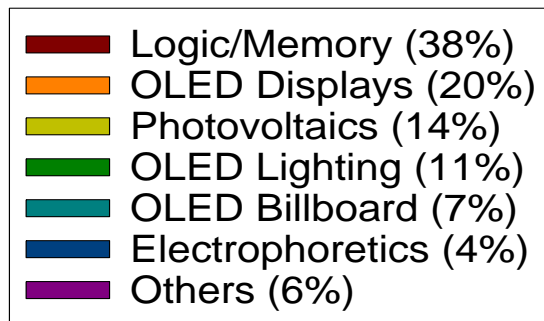
- UK at the forefront of LCD technology development since the 1980s
- 自20世纪80年代以来，英国一直处于LCD技术发展的最前沿
- UK amongst the leaders of OLED development since the 1990s
- 自20世纪90年代以来，英国一直是OLED发展的领导者之一
- UK is No. 5 in the global innovation index (WIPO 2017)
- 英国在全球创新指数中排名第五 (WIPO 2017)
- In the OLED field, UK has deep technology R&D
- 在OLED领域，英国在大学和公司中进行深入的技术研究

Printed & Organic Electronics Market

印刷和有机电子市场



Market Forecast for 2028 (US \$301 billion)



Source: IDTechEx

OLED Materials Available for Licensing

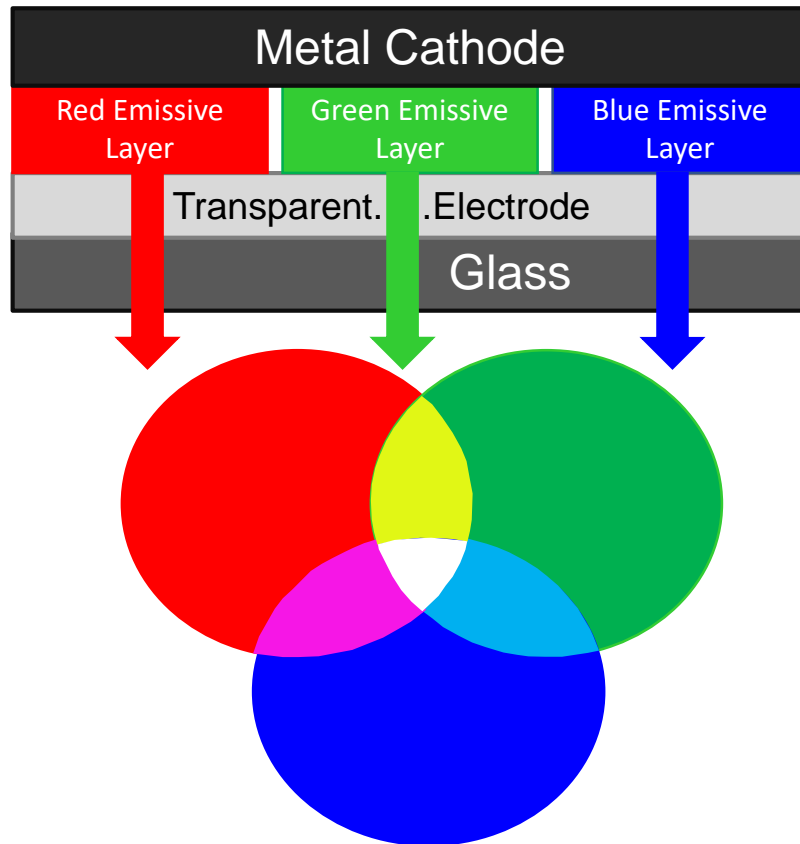
OLED材料用于许可



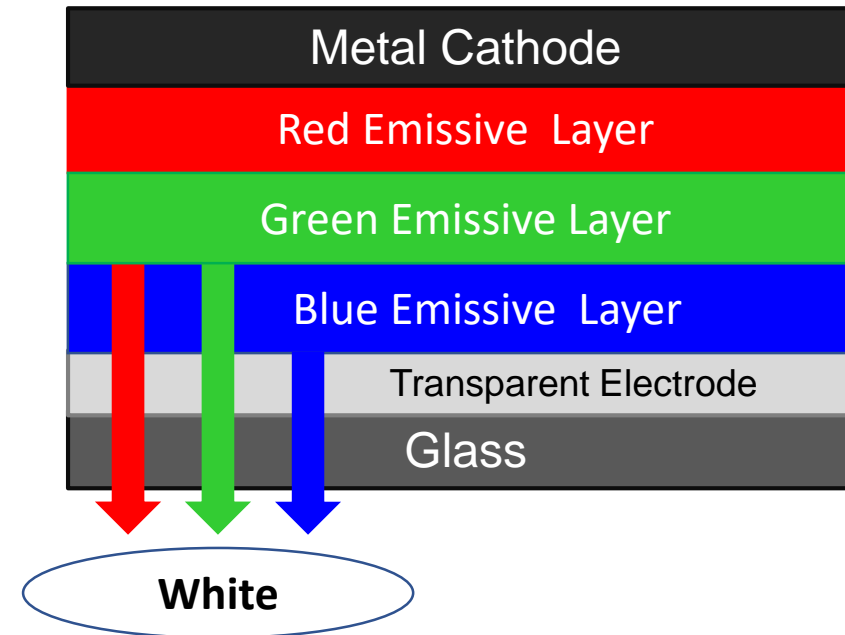
Layers 图层	Current Suppliers (Japanese/Korean/German) 现有供应商 (日本/韩国/德国)	Available For Licensing 可用于许可
Aluminium		
Electron Injector (EIL)	Nippon Steel, Merck	Yes 是
Contrast Enhancing Material	SFC, Novaled	-
Electron Transporter (ETL)	Idemitsu	Yes 是
Host + Dopant	DOW, Nippon Steel, Idemitsu, Dukson	Yes 是
Hole Transporter (HTL)	Hodogaya, Idemitsu, Mitsubishi, Merck	Yes 是
Hole Injector (Buffer) (HIL)	LG Chemical, Mitsubishi, Lumtec (Taiwan)	Yes 是
ITO	Japan Energy, Mitsui	Yes 是
Glass / Plastic		

Display and Lighting Applications

显示和照明应用



Display RGB



White Light

OLED Materials Production

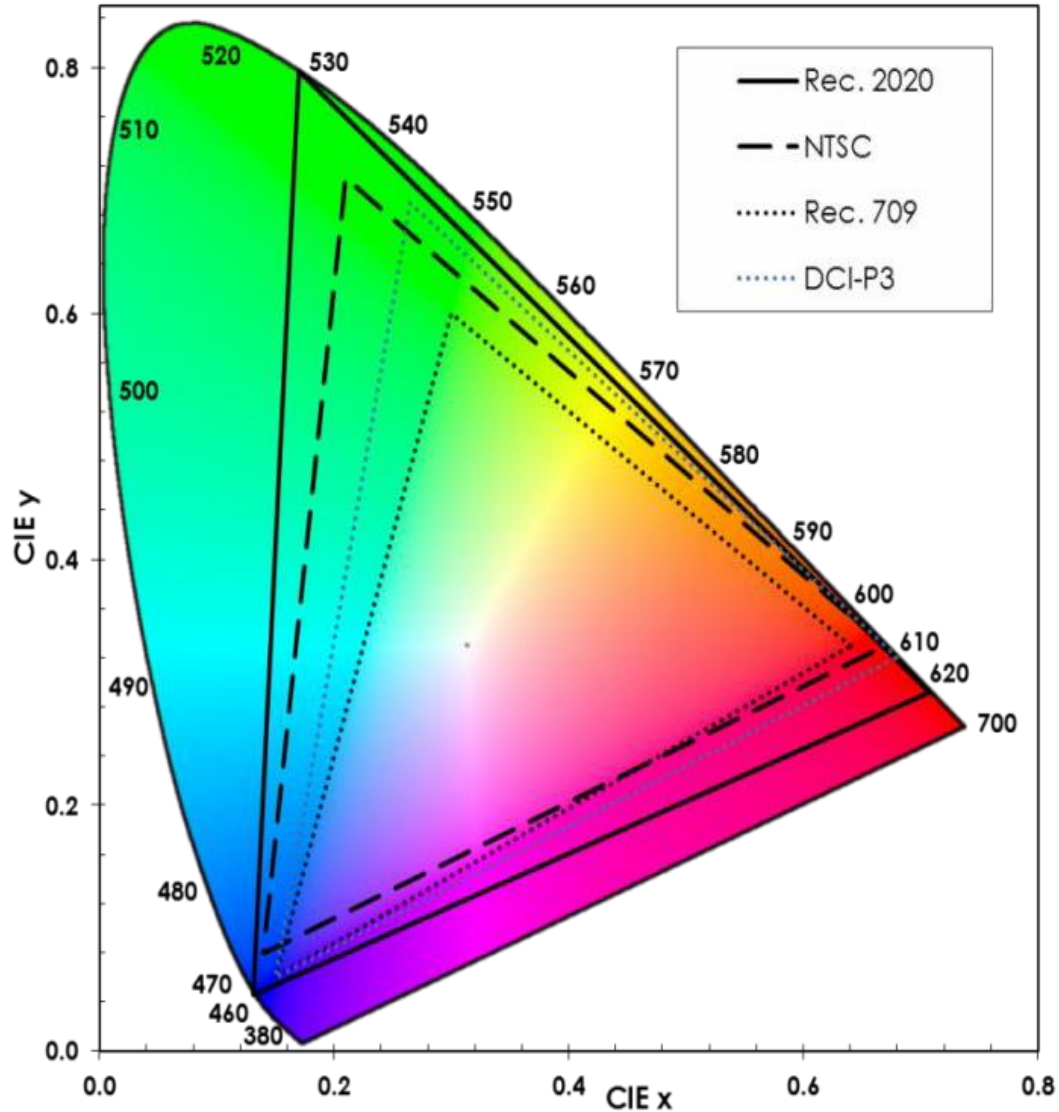
OLED材料生产



- Capacity 1 Kg/8 hour day
- Purity 99.98%
- Full Analytical Capability
- Excellent optical efficiency
- Device life-time as good as leading players

- 容量1 Kg / 8小时
- 纯度99.98%
- 完整的分析能力
- 出色的光学效率
- 该设备的寿命与市场上最好的一样

OLED Enables Color Gamut Rec.2020



- Today's color gamut standards:**
- Television: NTSC
 - Digital Cinema: DCI-P3
 - Computers: Adobe RGB

- Tomorrow: Rec. 2020**
- Published in 2012 by ITU
 - Sets UHD broadcast standards
 - Represents future standard for all displays

Gamut Standard	% of CIE 1931
Rec. 2020	75.8%
Adobe RGB	52.1%
DCI-P3	53.6%
Rec. 709/sRGB	35.9%

OLED Displays & Lighting Performance

OLED显示器和照明性能



Performance Measure 性能	OLED Display OLED显示屏	OLED Lighting OLED灯光
Luminance cdm^{-2} 亮度 cdm^{-2}	150-1000	500-7000
Colour 颜色	Full colour	White or RGB for decorative lighting
Colour Specification 颜色规格	100% NTSC	CRI > 90%
Panel size (diagonal/ cm) 面板尺寸	2-100	5-200
Life-Time at 1000 cdm^{-2}/h 一生中1000 cdm^{-2}/h	$T_{1/2} = 5000 - 50000$	$T_{0.7} = 10000 - 100000$
Efficiency lmW^{-1} 效率 lmW^{-1}	10-100	10-180
Backplane 显示背板	AM or PM	Simple structure
Pixels 像素	Yes	No, but small tiles
Process 过程	Batch	Batch or roll to roll
Cost ($\text{US}\$/\text{m}^2$) 成本 $\text{US}\$/\text{m}^2$	1000-2000	50-70

Manufacturing 制造业的 要点



- Many proven formulations, production SOPs, device processes
- 许多经过验证的配方，生产SOP，OLED制造工艺
- Synthesis of layer materials: traditional chemical processes
- 层材料的合成：传统的化学过程
- Purification processes: Two Stages 净化过程：两个阶段
- Final purification by sublimation 通过升华进行最终纯化
- Waste solvent recycling/reuse/disposal
- 废溶剂回收/再利用/处置

Manufacturing 制造业的要点



- Class 10,000 clean room
- **10,000级洁净室**
- Sublimation: Merck 10 kg/hour, sublimation line cost RMB 3m
- **升华：默克10公斤/小时，升华线成本300万元人民币**
- New Ops/4 materials/10T each/Yearly/50 people: Estimate RMB 50m
- **新的Ops / 4材料/ 10T /每年/ 50人：估计5000万人民币**
- Total manufacturing cost 10% of current material prices
- **总制造成本占当前材料价格的10%**

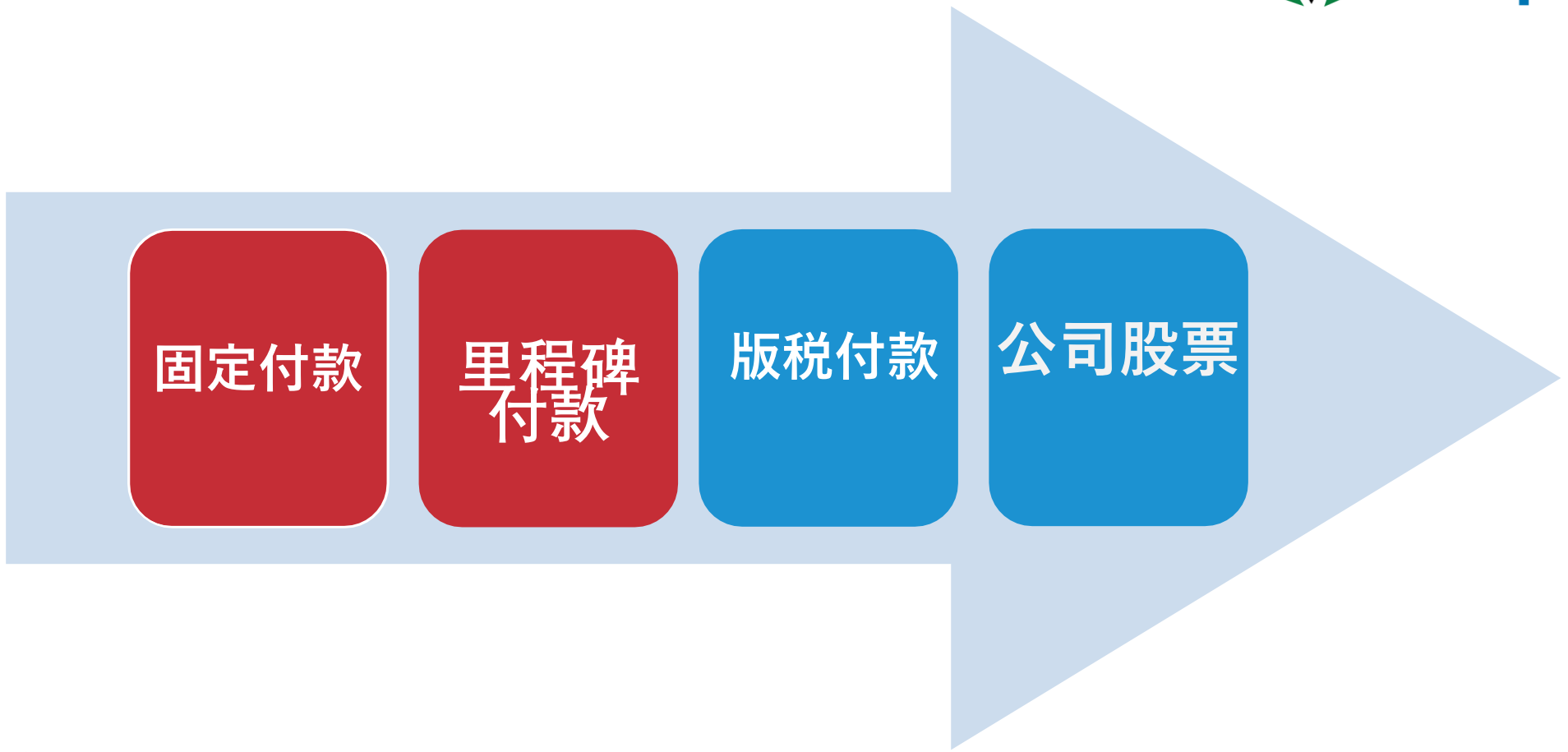
IPR 专利权



- IPR report and map available
- License granted on IPR position and know-how
- Opportunity to further build IPR position
- Full set of OLED display (and lighting materials)

- 知识产权报告和地图可用 知识产权地位
- 和专有技术授予的许可 有机会进一步建立知识产权地位 全套OLED显示屏（和照明材料）

Business Model 商业模式



Summary 概括的

- Bricpoint offering OLED materials production technology
- **Bricpoint提供OLED材料生产技术**
- Full-set of OLED materials for production of displays
- **用于显示器生产的全套OLED材料**
- Flexible licensing and joint venture business model
- **灵活的许可和合资业务模式**
- Contact Bricpoint for discussion
- **联系Bricpoint进行讨**



谢谢

Thank You