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OUR TRANSISTORS YOUR ADVANTAGE

Ian Jenks

Chairman and Chief Executive Officer

Ian has more than 30 years of board-level experience in the industrial technology industry and has served as chief executive officer of companies operating in the United States and Europe. Ian was formerly the president of Uniphase Inc, Chairman of Oplink Communications Inc which he took public on the NASDAQ and spent seven years as a partner of Crescendo Ventures llp. Ian founded and since August 2010 has acted as the CEO of Ian Jenks Limited, a consulting company providing consulting services to companies in the industrial technology industry. Ian has been a director of Techstep ASA, a provider of managed mobile services in the Nordics, Paysafe plc., an international provider of payment processing services, and Brady plc, a provider of commodity trading software. He also has served and continues to serve as a director of a number of private companies. Ian received a B.Sc. in Aeronautical Engineering from Bristol University.

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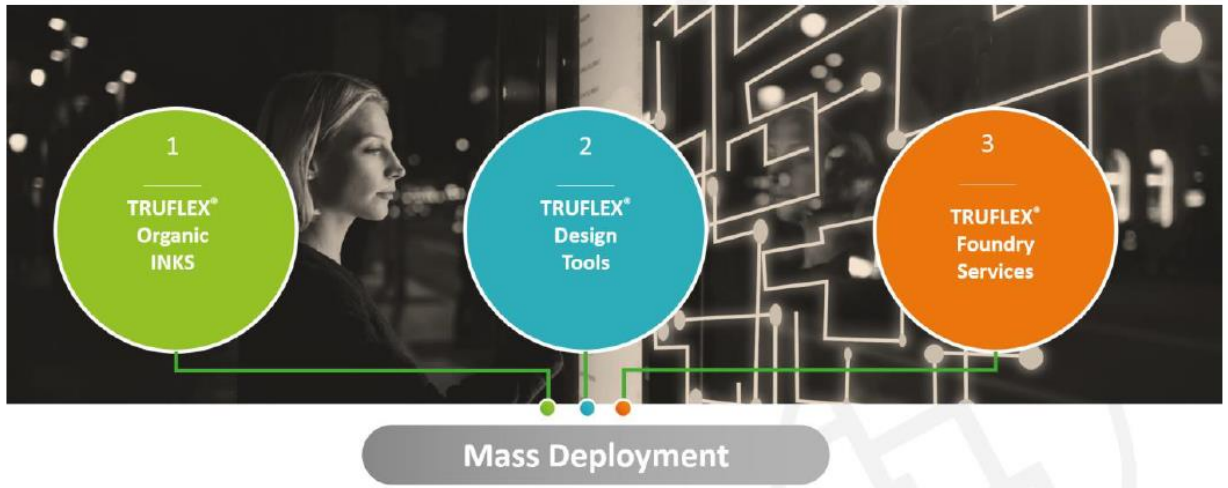
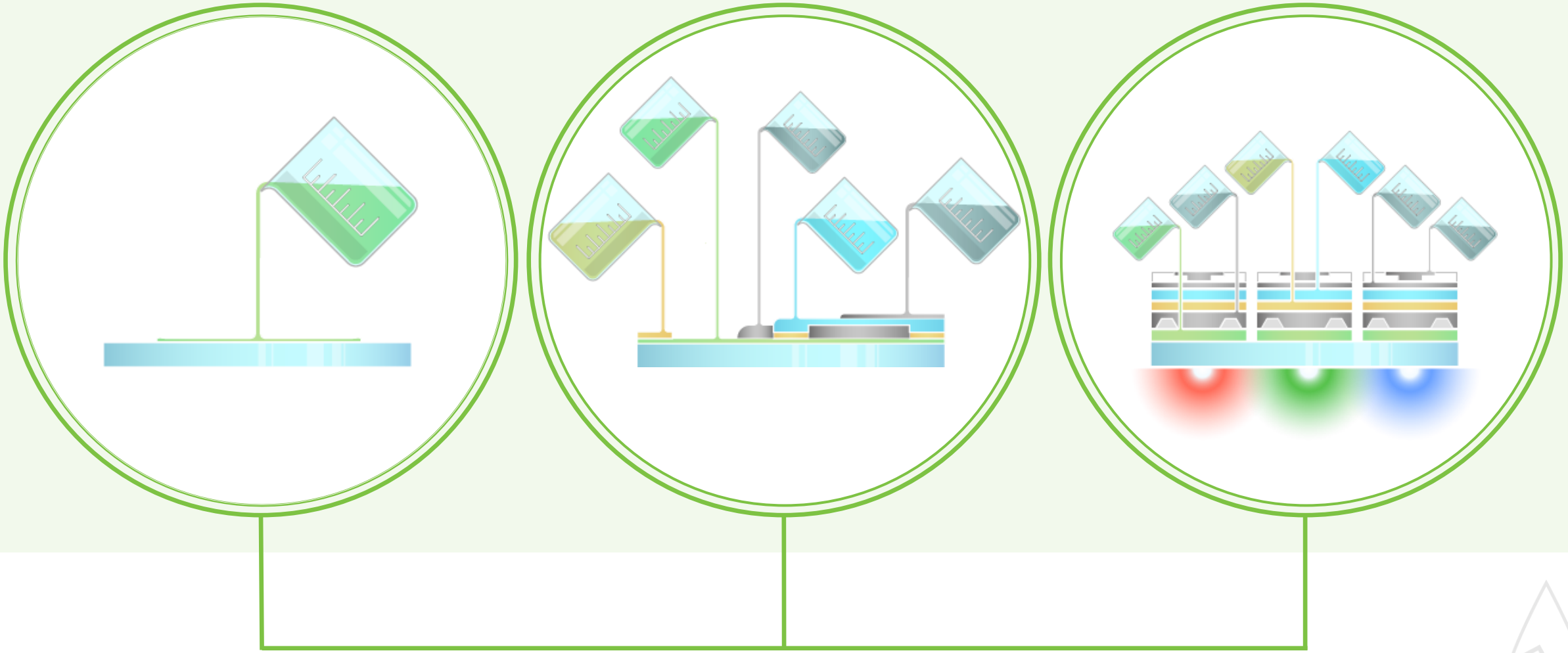


- 80C Organic TFT Backplanes for Mini-/Micro LED display
- Employees: 45 FTEs ,headquartered in Manchester, UK
- Went public in March 2021 raising $24.6m
- Capable to provide backplane (through LDI from UK foundry) for 2um QD-uLED or QD EL
- Organic dielectric material is qualified to use on ABF film for HPC substrate application (AI , 5G ..etc)
- Extensive IP portfolio comprising 17 patent families

  (~122 issued patents; 13 pending & > 35 codified company trade secrets)

We manufacture “TRUFLEX® inks” that are used to make transistors



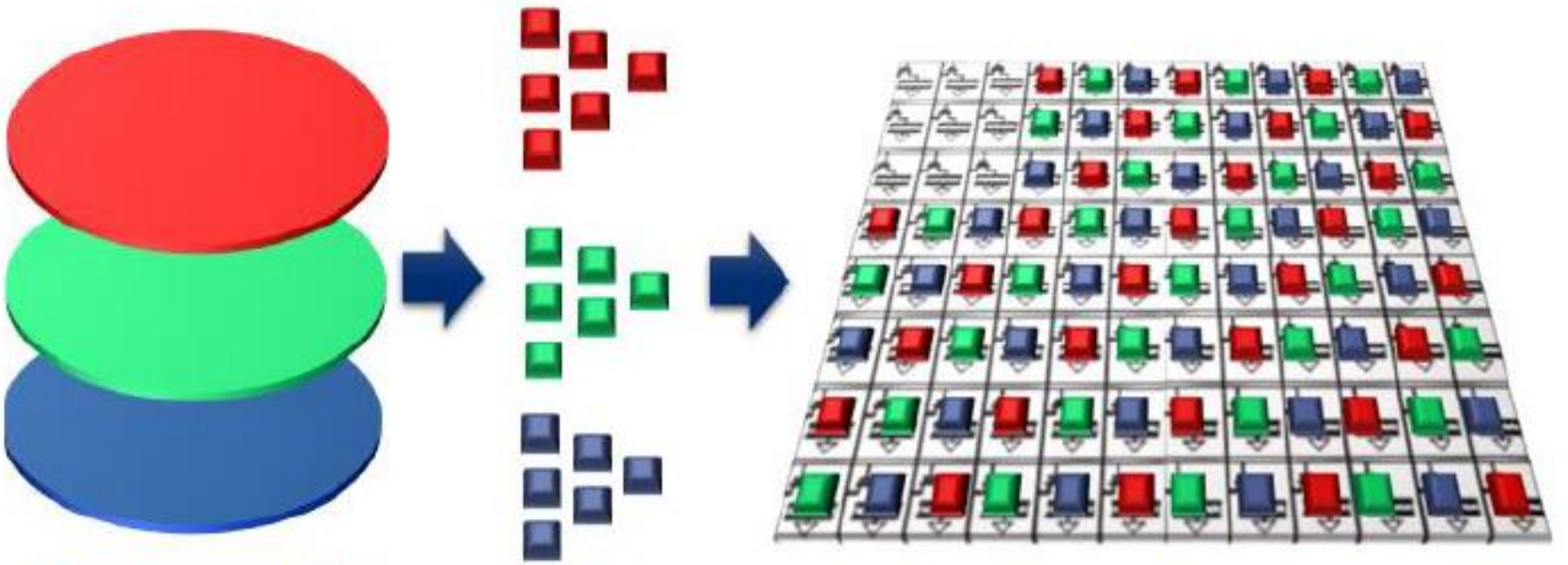
Mini/MicroLED Display Benefits

Display	LCD	OLED	µ-LED
Efficient light source	Yes	No	Yes
Self-emissive	No	Yes	Yes
Brightness [nits]	3K	1K	>100K
Power saving vs LCD	N/A	30%—40%	90%
Operating lifetime [years] (continuous on use)	7	2.5-3.5	9-11
Sunlight readability *	Poor (except reflective LCD)	Average	Excellent

* - sunlight readability requires a peak brightness of >5K nits for readability in all conditions

Mini/MicroLED, how it's done today

- Transfer of LEDs from individual R G and B epi-wafers, then solder or laser weld
- Yield of transfer is never 100% so costs are incurred for inspection and repair of faulty pixels

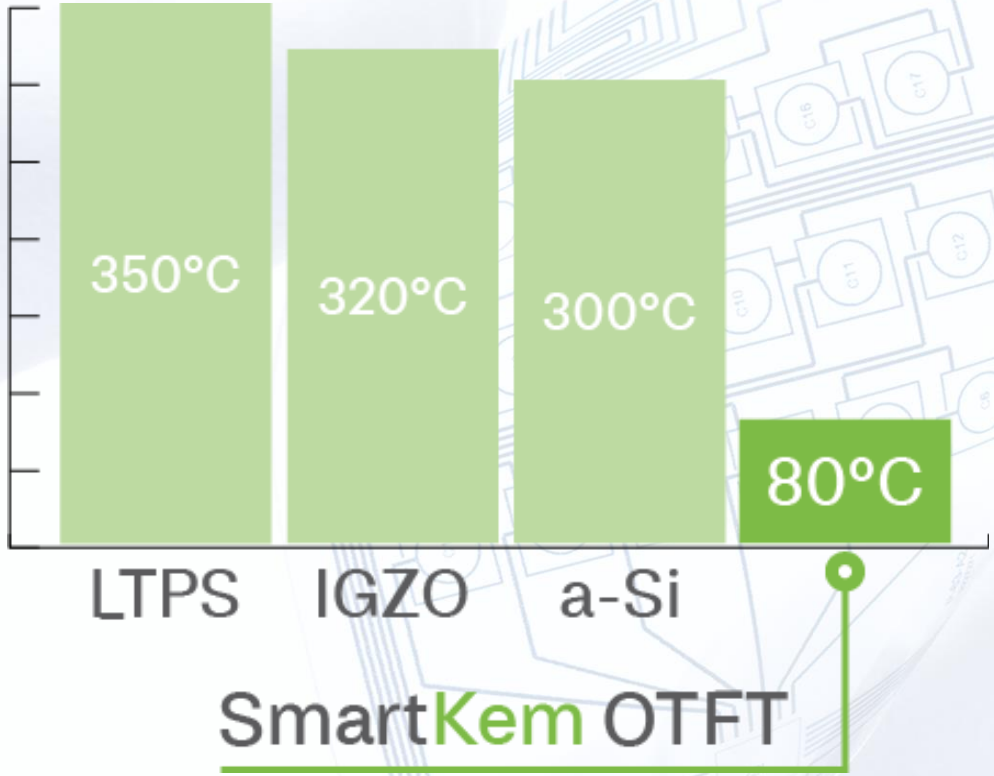


Red, green and blue LED epiwafers.

Chip singulation

Transfer and assembly: connection to the transistor matrix that controls individual pixels.

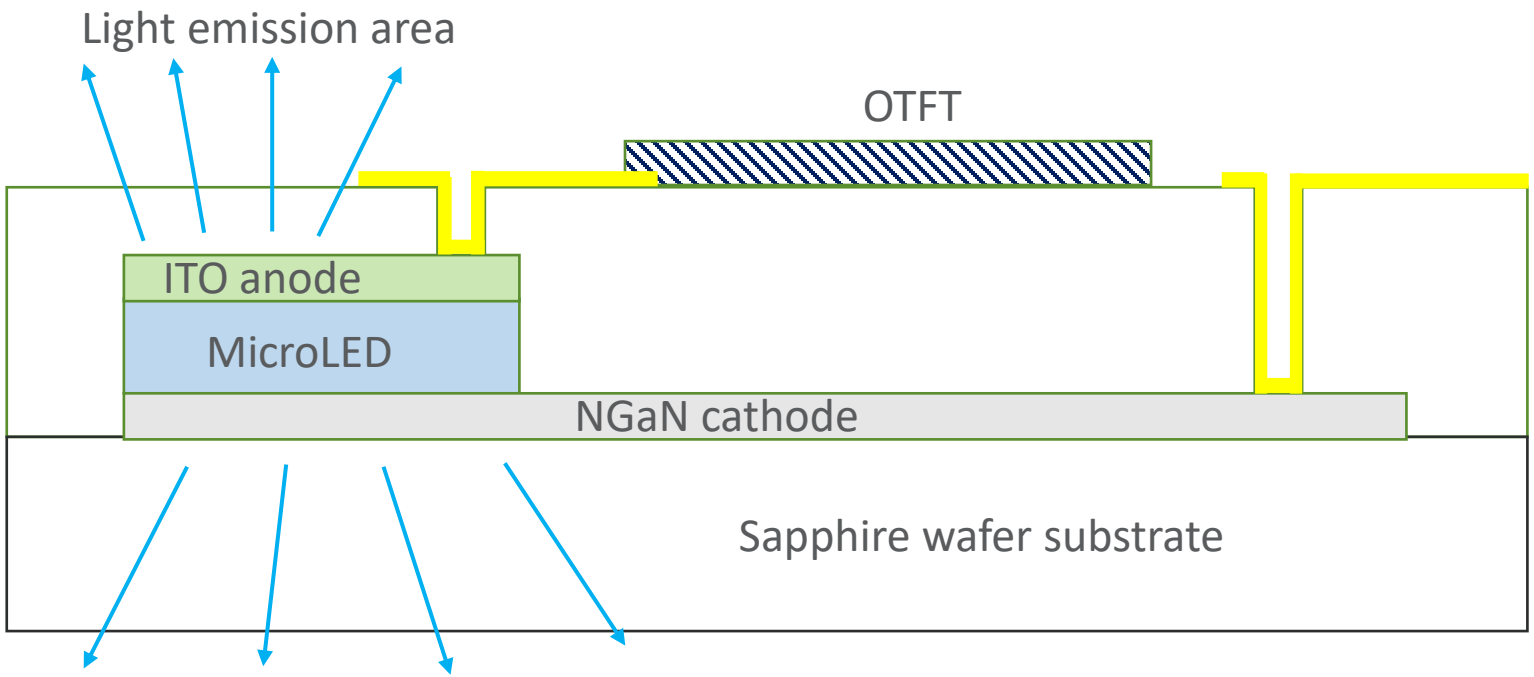
Processing temperatures for transistor backplanes

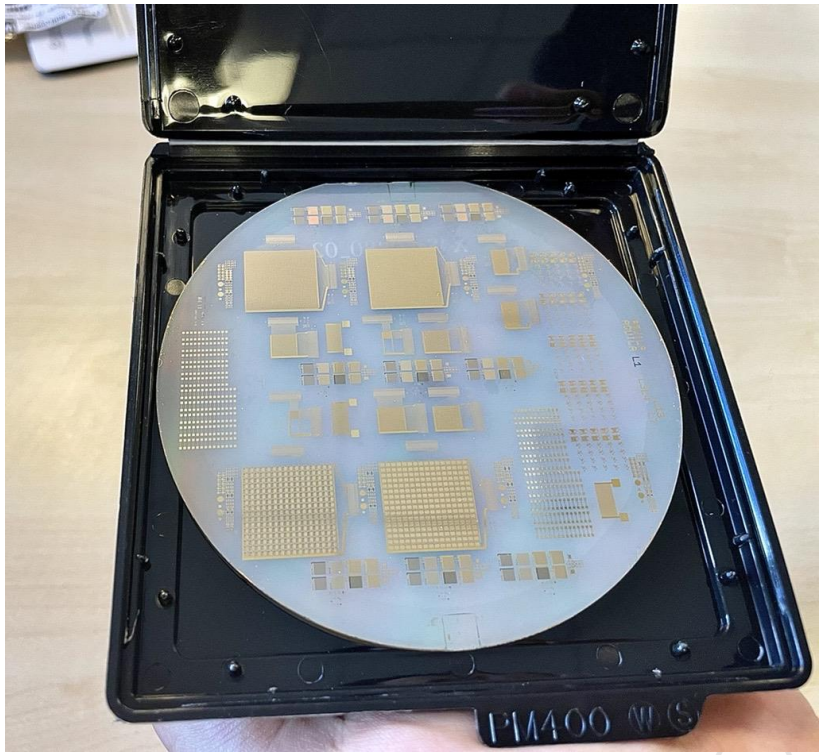


high temperature processing damages LEDs

Micro LED Monolithically Integrated OTFT

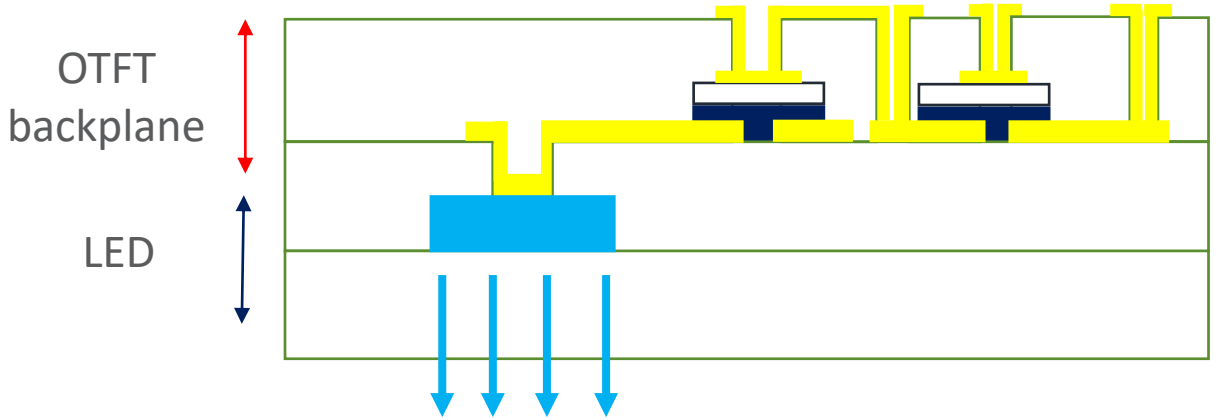
- Using low temperature processing and direct laser writing to
  - Integrate OTFT backplane on top of u-LED array on Sapphire or Silicon wafer
  - Eliminate transfer losses

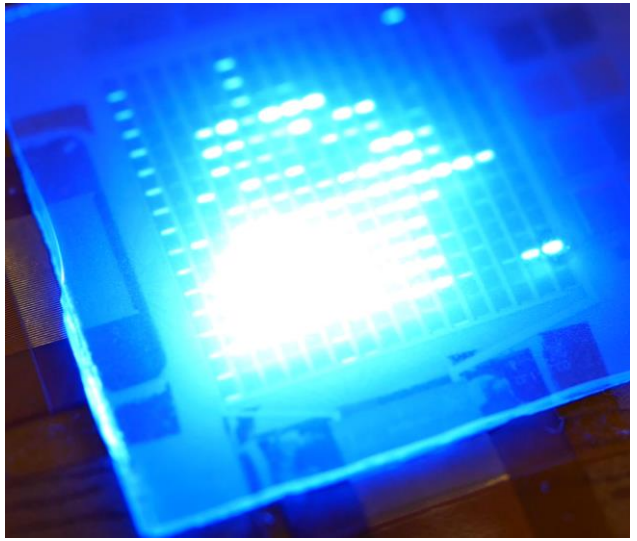




Micro LED Monolithically Integrated OTFT

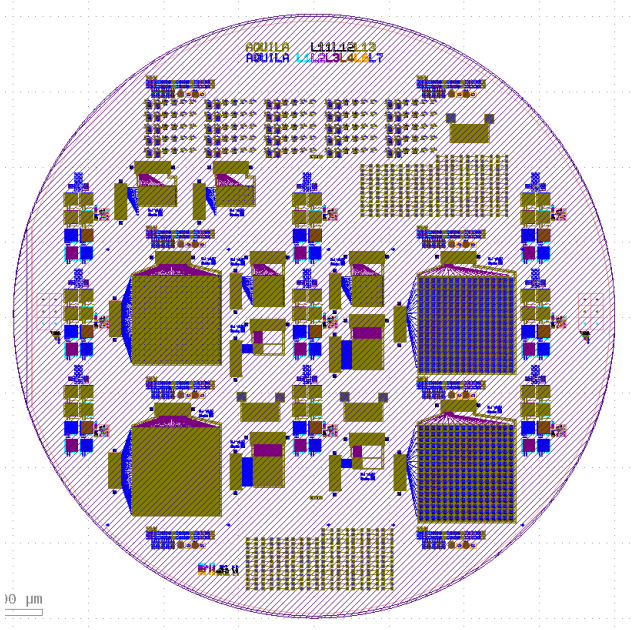
- Low temperature process and direct laser writing
- Proof of concept design developed to show how OTFT can be processed on top of u-LED (**no transfer so no transfer yield loss**)
- Initial demos tested to **>100K nits**.
- Process can be scaled from **10ppi to >2500 ppi** with appropriate lithography tools
- Colour can be integrated through the use of quantum dot colour conversion materials (printed or photopatterned)





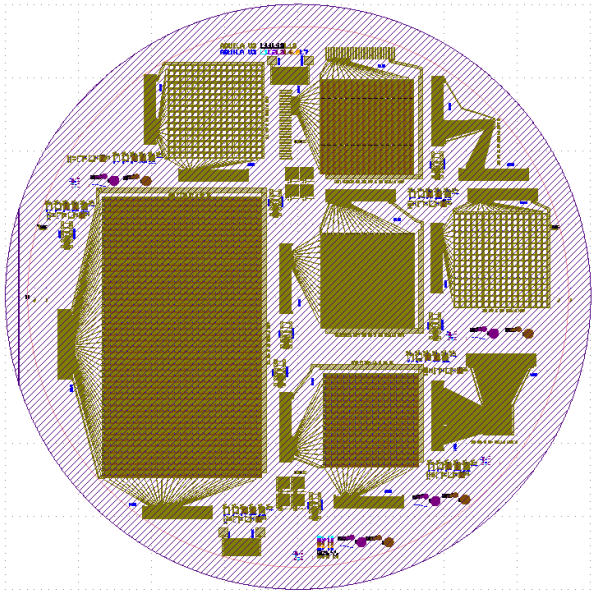
MicroLED Customer Specific Designs

V2 –16x16 and 48 x 48)



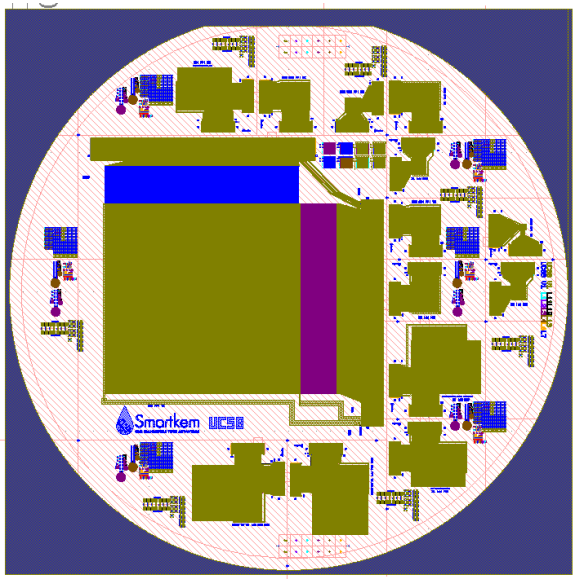
4” wafer

V3 – High brightness designs



4” wafer

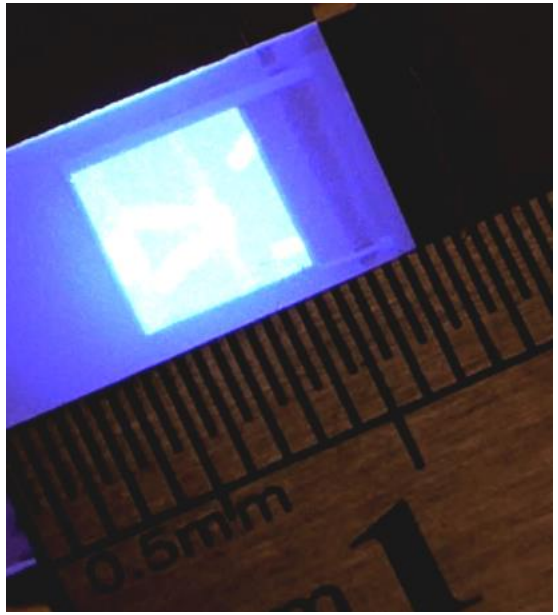
V4– High resolution displays (254ppi, 508ppi, 1500ppi)



4” wafer

MicroLED Integrated OTFT Looking Forward

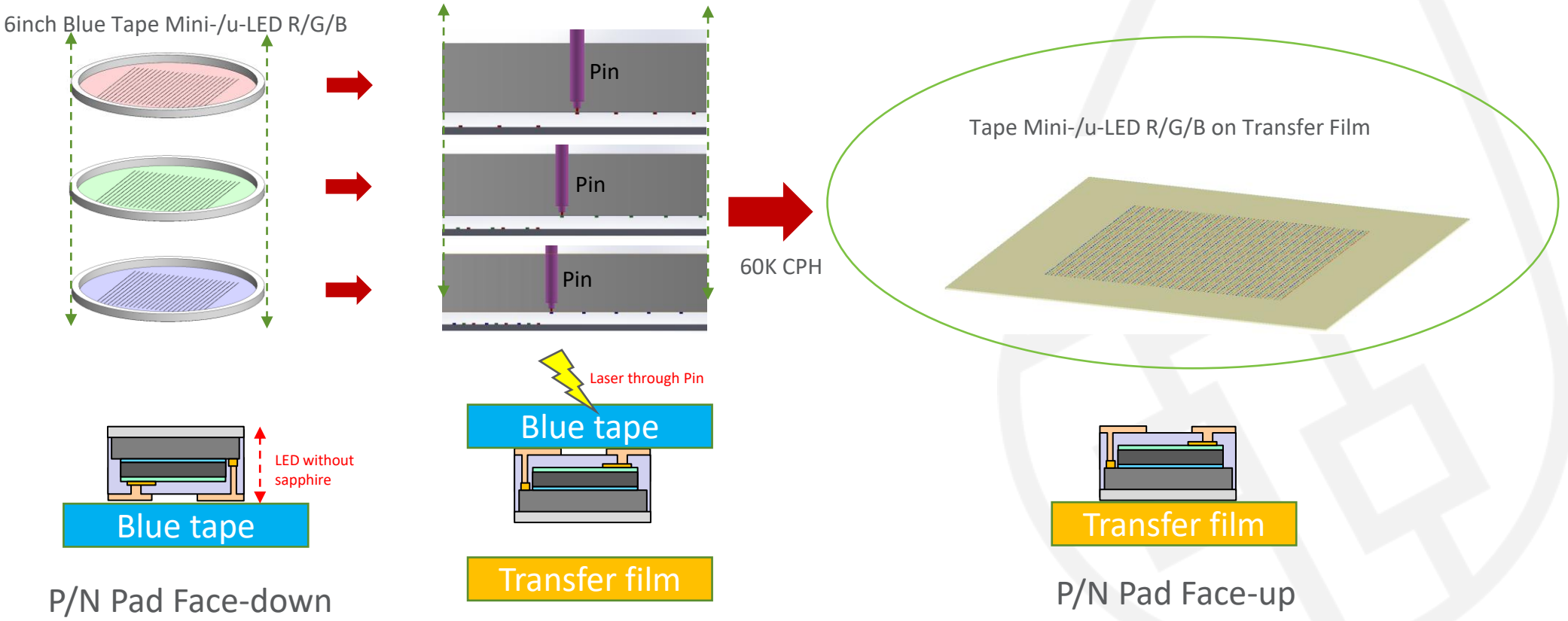
- 300mm wafers
- Backside wafer polishing
- Wafer saw process for dicing
- Integration of Gate on array circuits in OTFT
- Sub micron processing



254ppi 100 micron pitch 48x48 display

Mini/Micro LED Monolithically Integrated OTFT at large scale

Mini/Micro LED Chip on Transfer Film process



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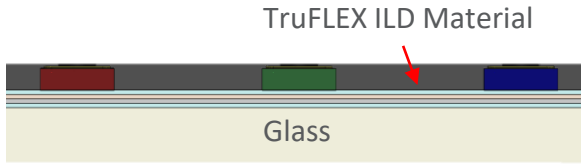
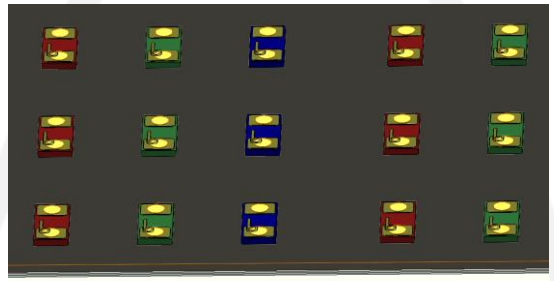
Mini/Micro LED Monolithically Integrated OTFT at large scale

Add RDL (Redistribution layer), via holes and metal track

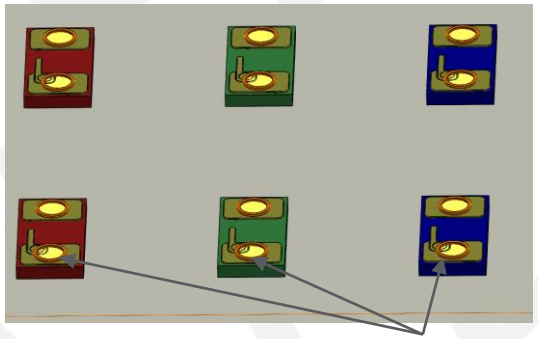
COF



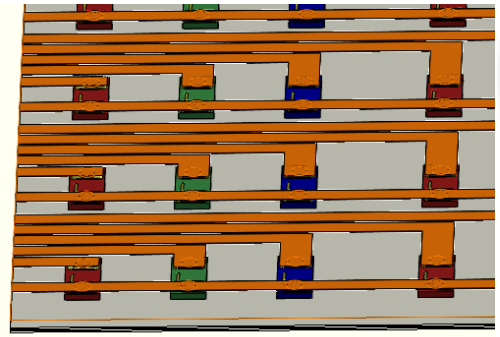


ILD via hole

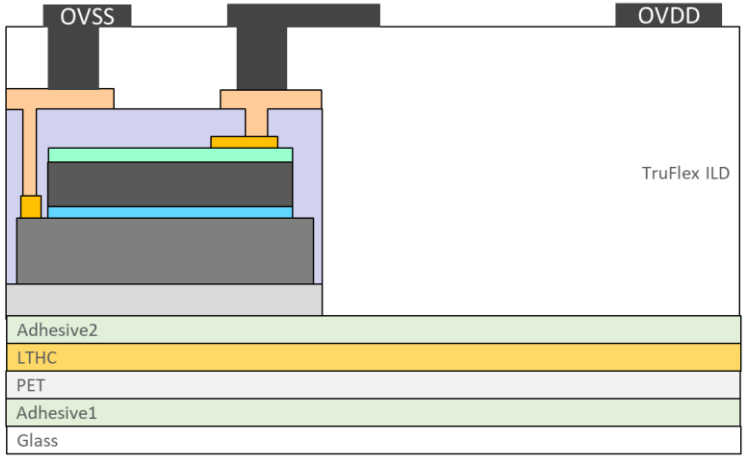
Overall Accuracy Decided by CCD (<0.5um)



ILD Via hole through Photo-imaging



Make Metal tracks



- **No welding/soldering**
- **Guaranteed Ohmic contact**
- **Testing of all devices before adding OTFT**

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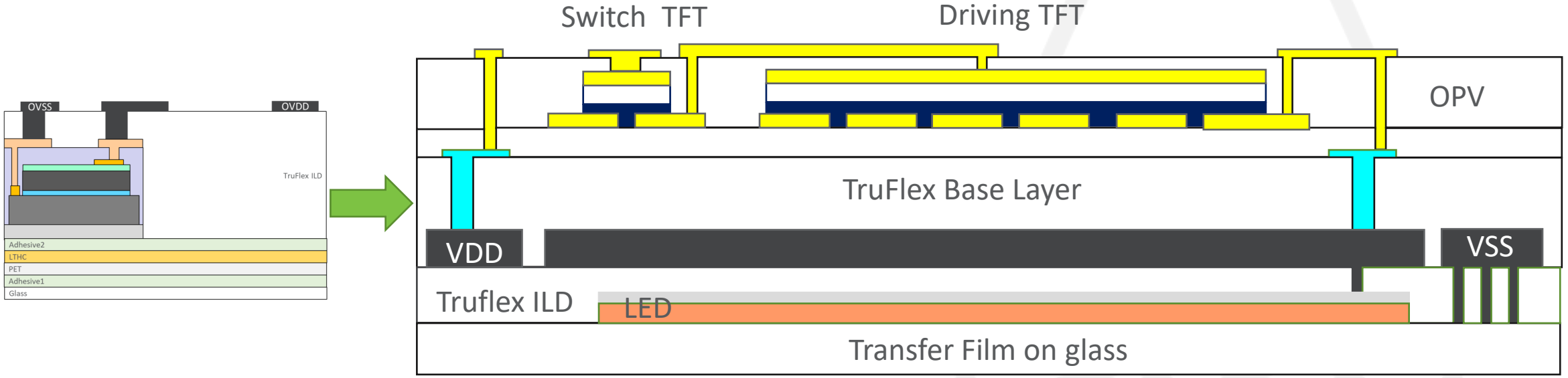
Mini/Micro LED Monolithically Integrated OTFT at large scale

Add the Active-Matrix Package, solution coated OTFT at low temperature



- Only mass transfer step is placing Micro LEDs on transfer film
- Allows for smaller Micro LEDs to be used
- Replaces 20 mask LTPS process with 5 Mask solution coated OTFT
- Process compatible with standard ASi production line (But no MOCVD)
- Replaces two high cost glass substrates with one low cost PEN substrate
- Electronics all on back of LED eliminating need for edge bonding

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THANK YOU

For more information contact us:

Manchester Technology Center

Hexagon Tower, Delaunays Road,

Blackley, Manchester M9 8GQ UK

+44 (0) 161 721 1514

enquiries@smartkem.com