



Cautionary Note Regarding Forward Looking Statements

This presentation contains certain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934 and Private Securities Litigation Reform Act, as amended, including those relating to the Company's product development, market opportunity, competitive position, possible or assumed future results of operations, business strategies, potential growth opportunities and other statements that are predictive in nature. These forward-looking statements are based on current expectations, estimates, forecasts and projections about the industry and markets in which we operate and management's current beliefs and assumptions.

These statements may be identified by the use of forward-looking expressions, including, but not limited to, "expect," "anticipate," "believe," "estimate," "potential," "predict," "project," "should," "would," and similar expressions and the negatives of those terms. These statements relate to future events or our financial performance and involve known and unknown risks, uncertainties, and other factors which may cause actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements. Such factors include those set forth in the Company's filings with the Securities and Exchange Commission. Prospective investors are cautioned not to place undue reliance on such forward-looking statements, which speak only as of the date of this presentation. The Company undertakes no obligation to publicly update any forward-looking statement, whether as a result of new information, future events or otherwise.



2005



The Crazy Frog



2005



2005



2005



Nokia N90

NOKIA



2007



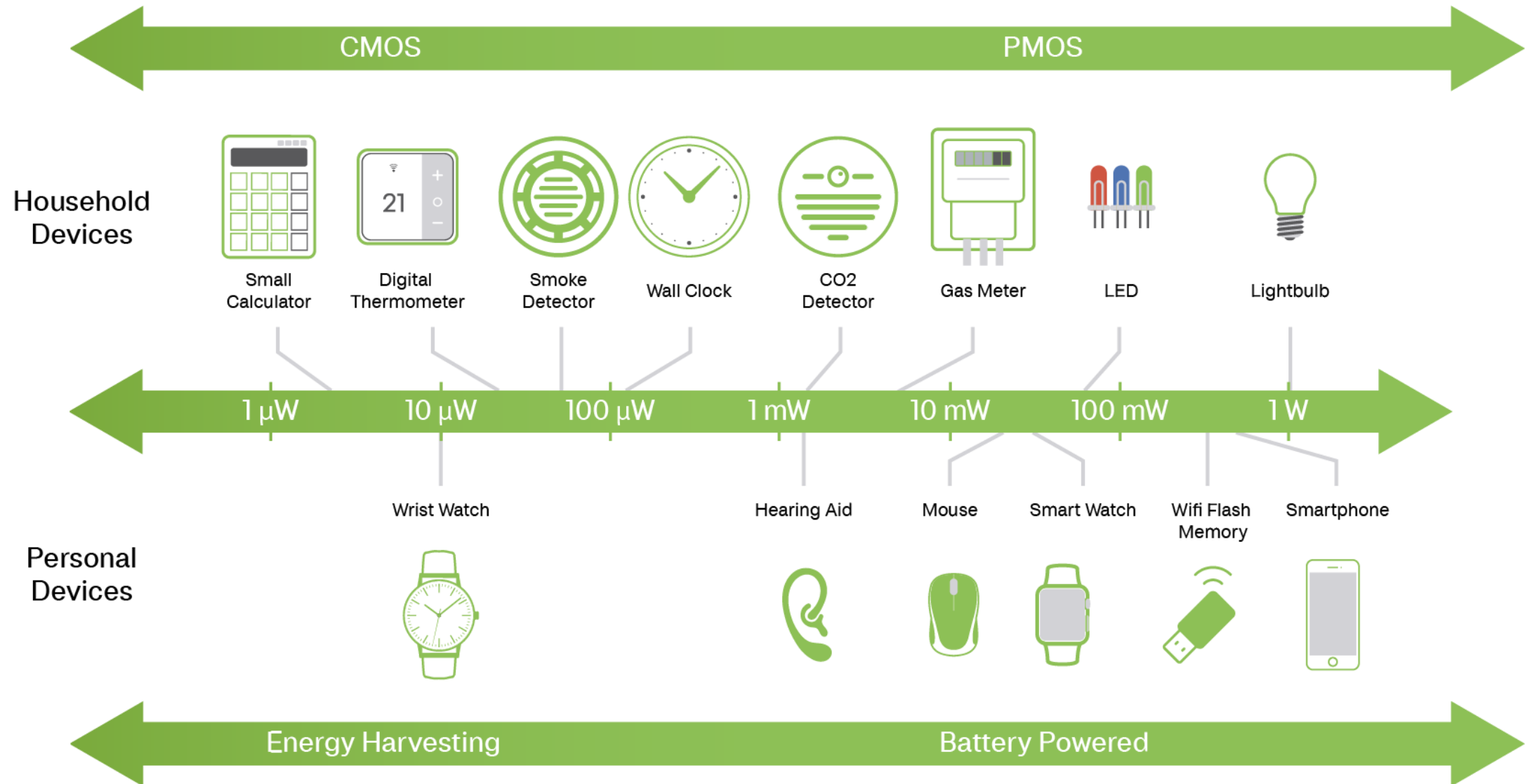
iPhone 2G



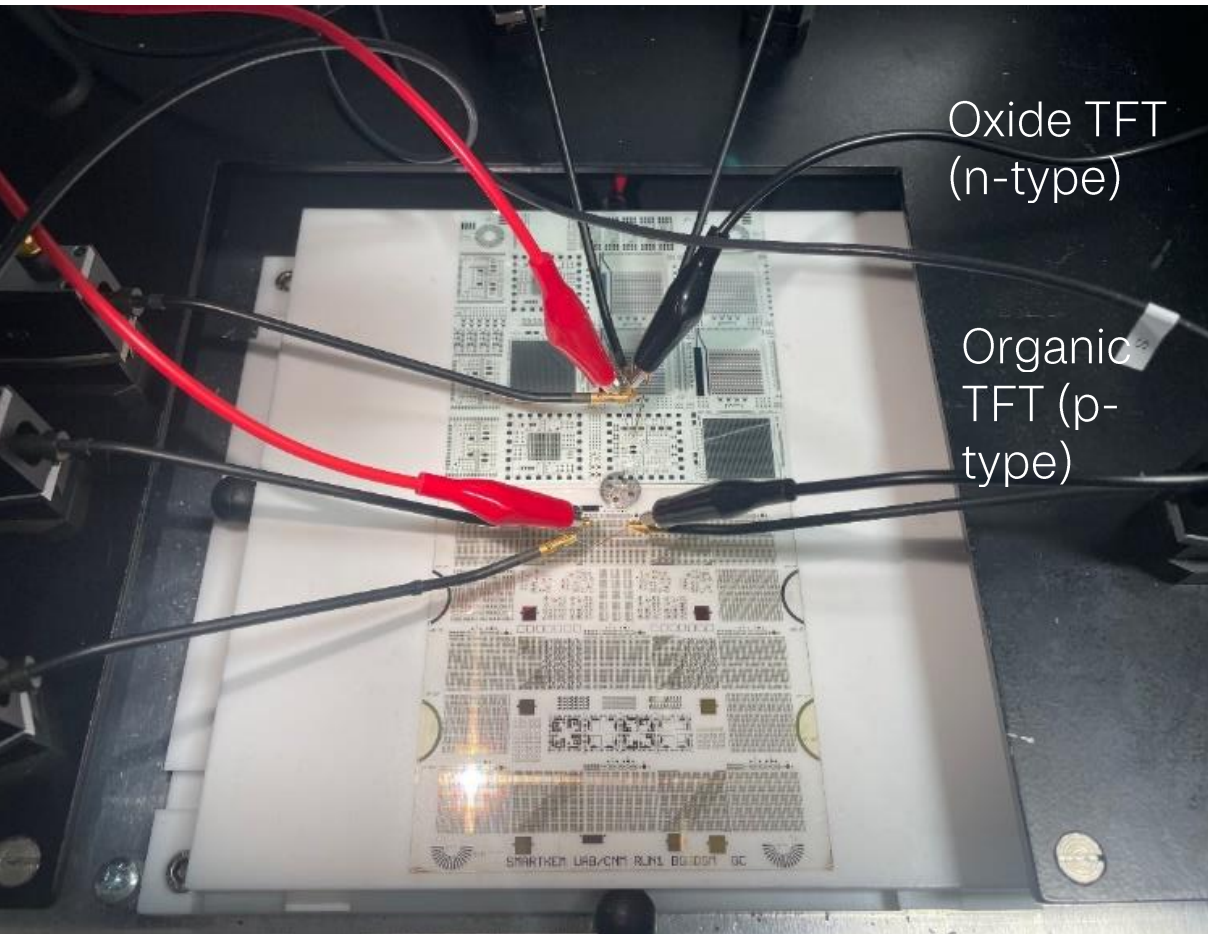


The Internet of Things

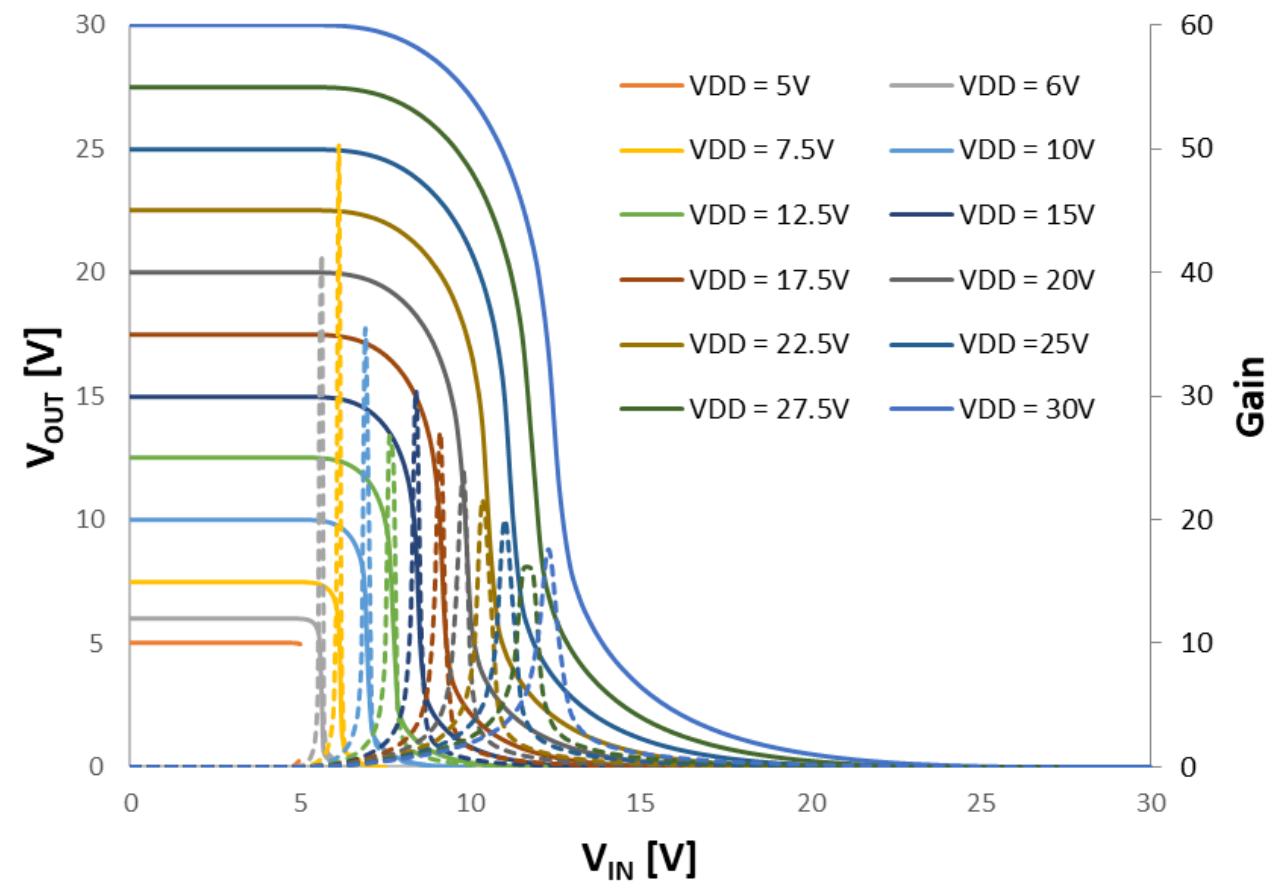
Market Size: \$544bn



Using OTFT and IGZO to make CMOS



Perfect Inversion



Tianma and SmartKem Cooperation for AOS and OTFT



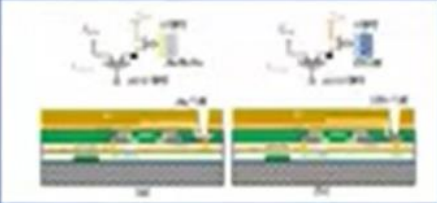
SHANGHAI JIAO TONG
UNIVERSITY



TFT microarray biosensor chip

OTFT provides the fixed interface of biological probe molecules and realizes the function of signal conversion.

AOS-TFT realizes the function of fast switch selection of pixels, and finally realizes the function of ion sensing.



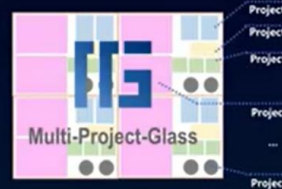
2021 Shanghai Science & Technology Innovation Plan

Jointly developed with
SJTU & SmartKem

TIANMA

Multi-Project-Glass (MPG) Concept

Can we apply a similar concept to TFT display foundry?




- Large area & sufficient capacity
- Fine resolution (μm)
- Very low cost/area
- Transparent flexible (i.e. with PI substrate).
- Transistor circuits integration (a-Si, LTPS, oxide)
- More convenient for post processing/material integration

Design verification

MPG would be able to provide a cost-effective route to support R&D by mature TFT display foundry capacity. It is very convenient to produce new sensor devices on a large scale.

MPG Production Plan



From 2021 H2

From 2020

Wuhan G6 LTPS AMOLED

Hubel Changfeng New Display Innovation Center (G8.5)

Shanghai G4.5

Shanghai G5

Shanghai G5.5 AMOLED

Xiamen G5.5 LTPS

Xiamen G6 LTPS

Xiamen G6 AMOLED

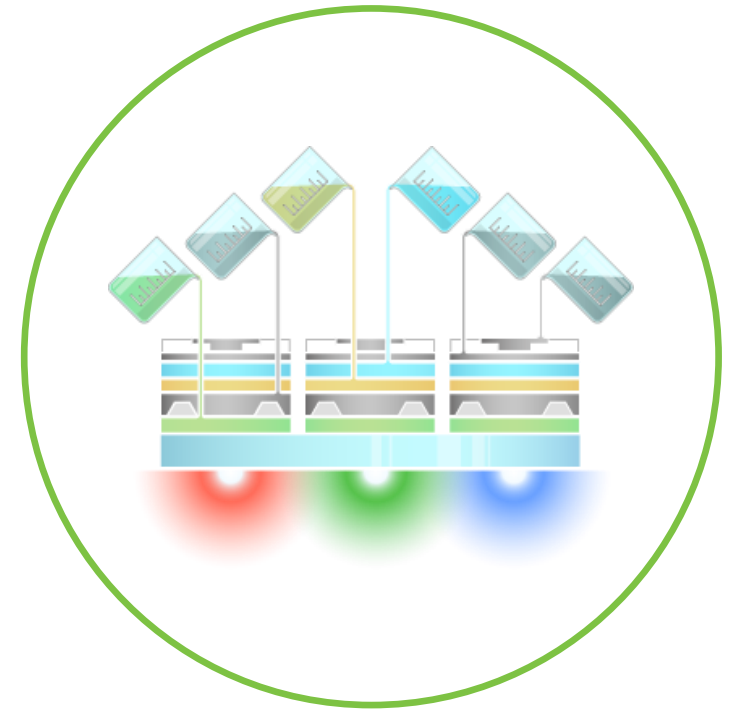
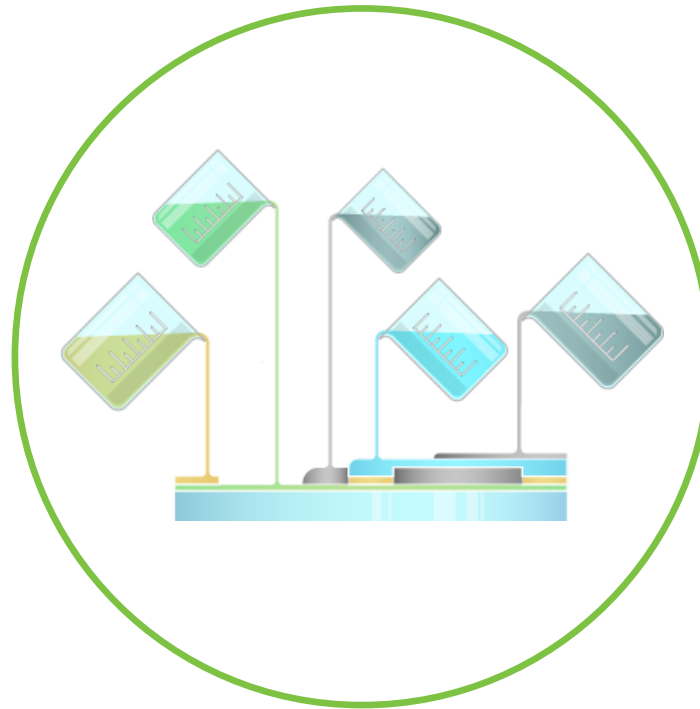
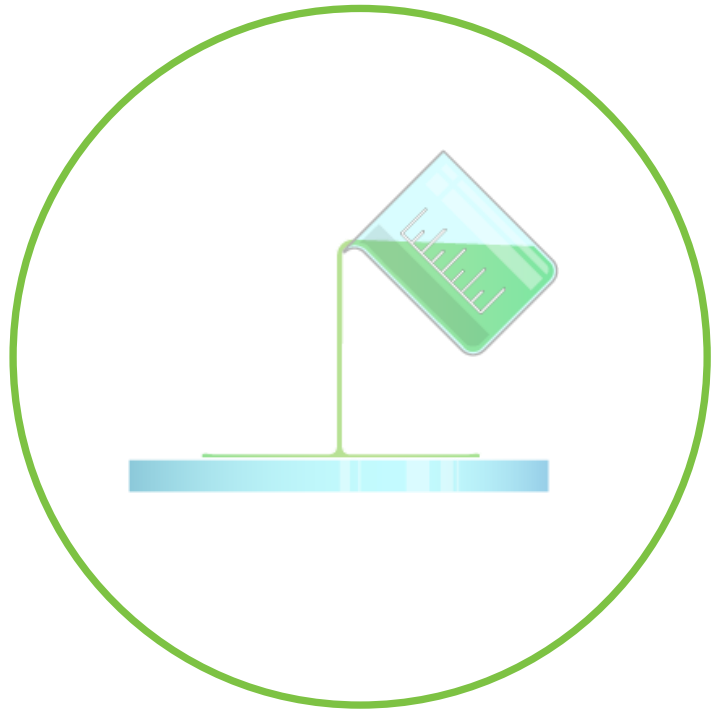
Shenzhen Passive

Chengdu G4.5

Wuhan G4.5

Akita G2.5, G3.5 Tianma Japan

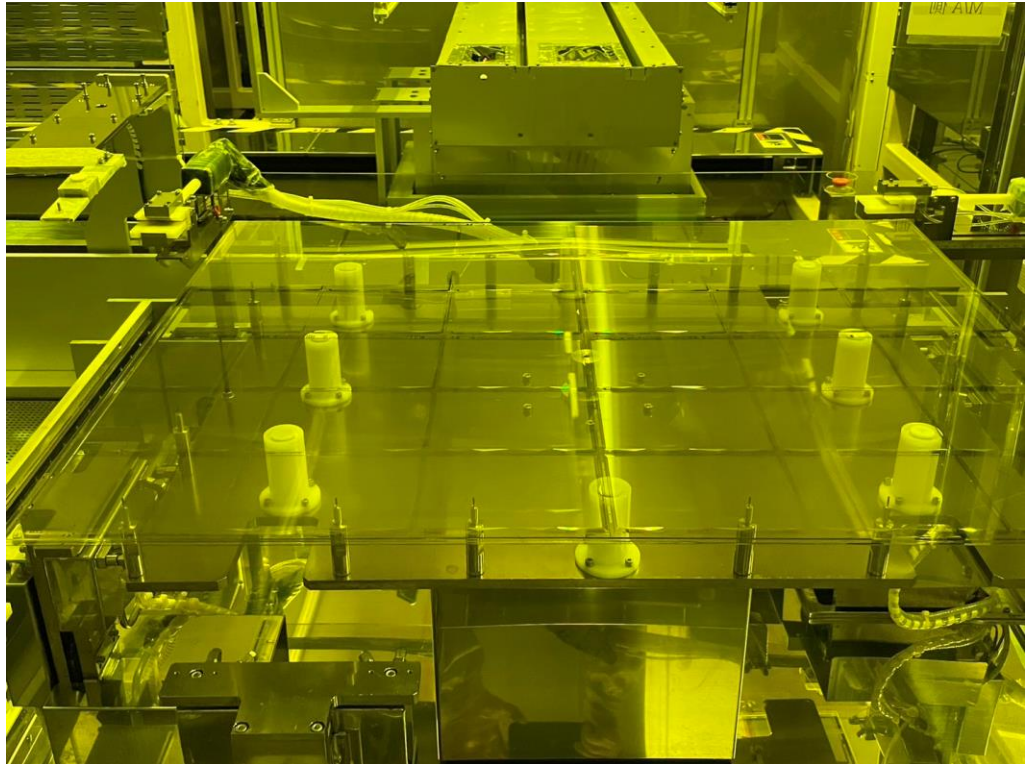
We manufacture “TRUFLEX®” inks used to make transistors



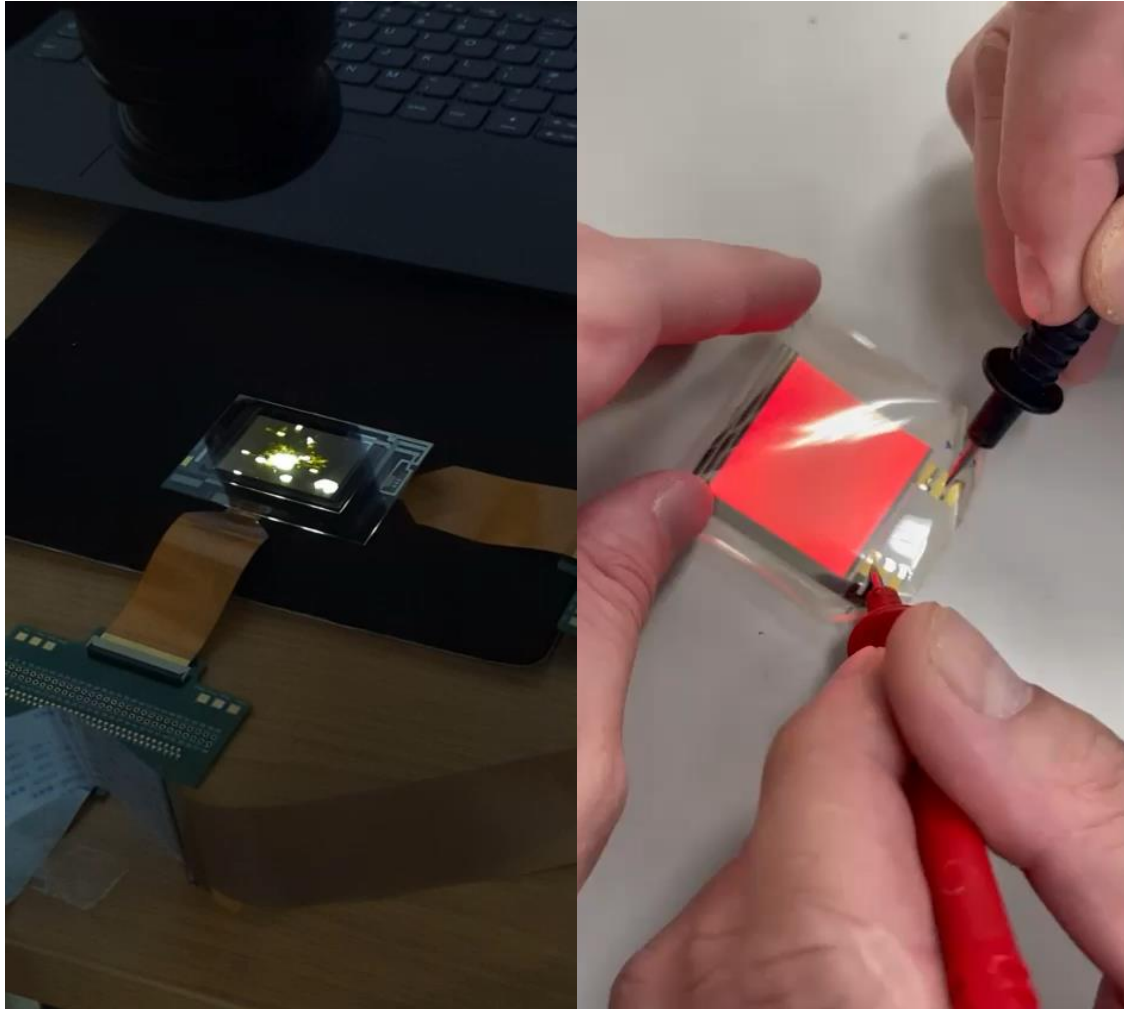
Sell materials, licence processes and fields of use



Single layer application

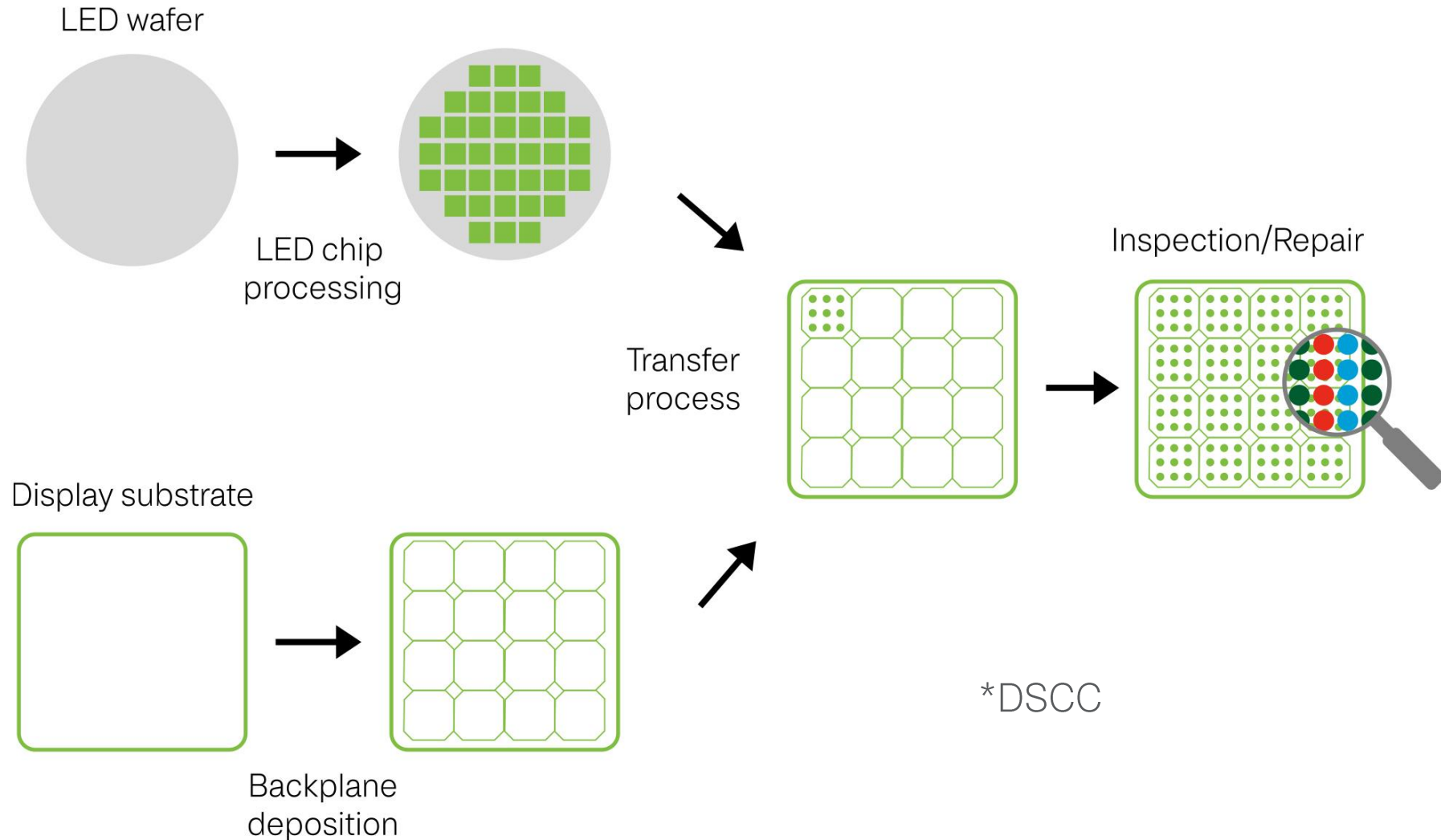


Transistor Backplanes

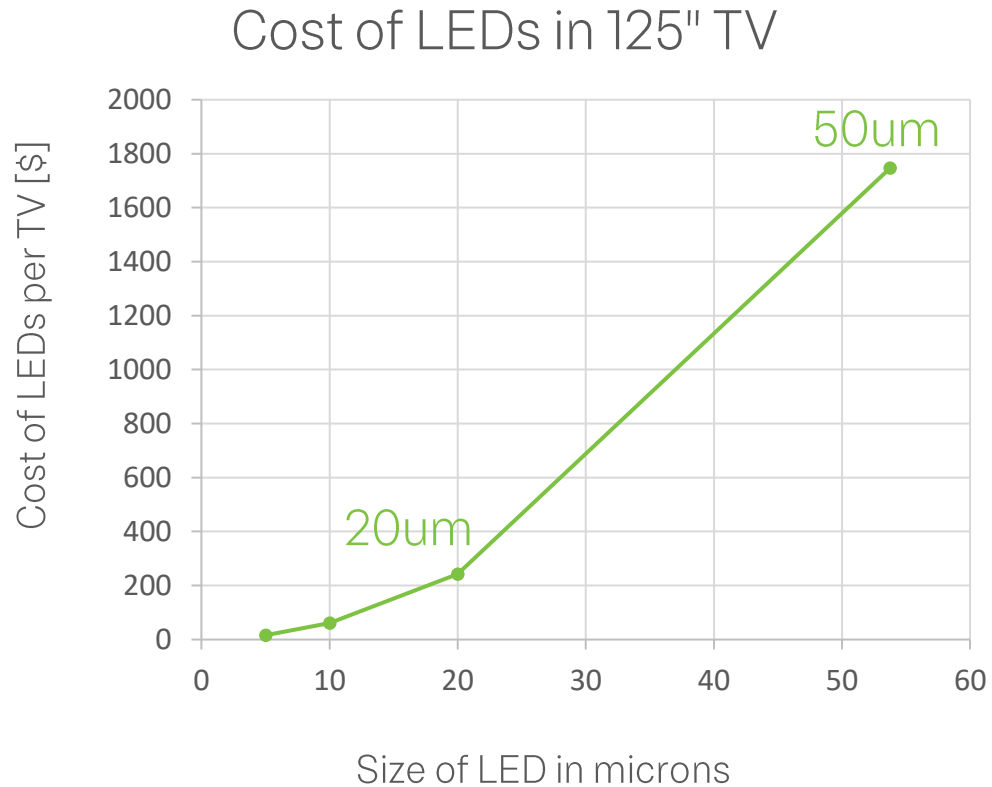




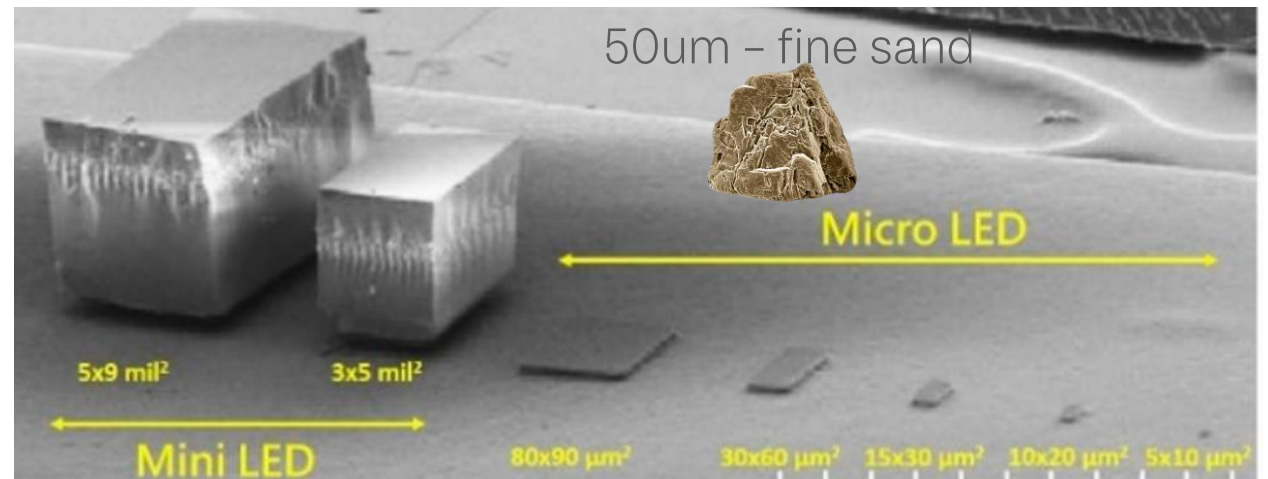
Making MicroLED Displays



MicroLEDs need to be small to make them viable at large scale



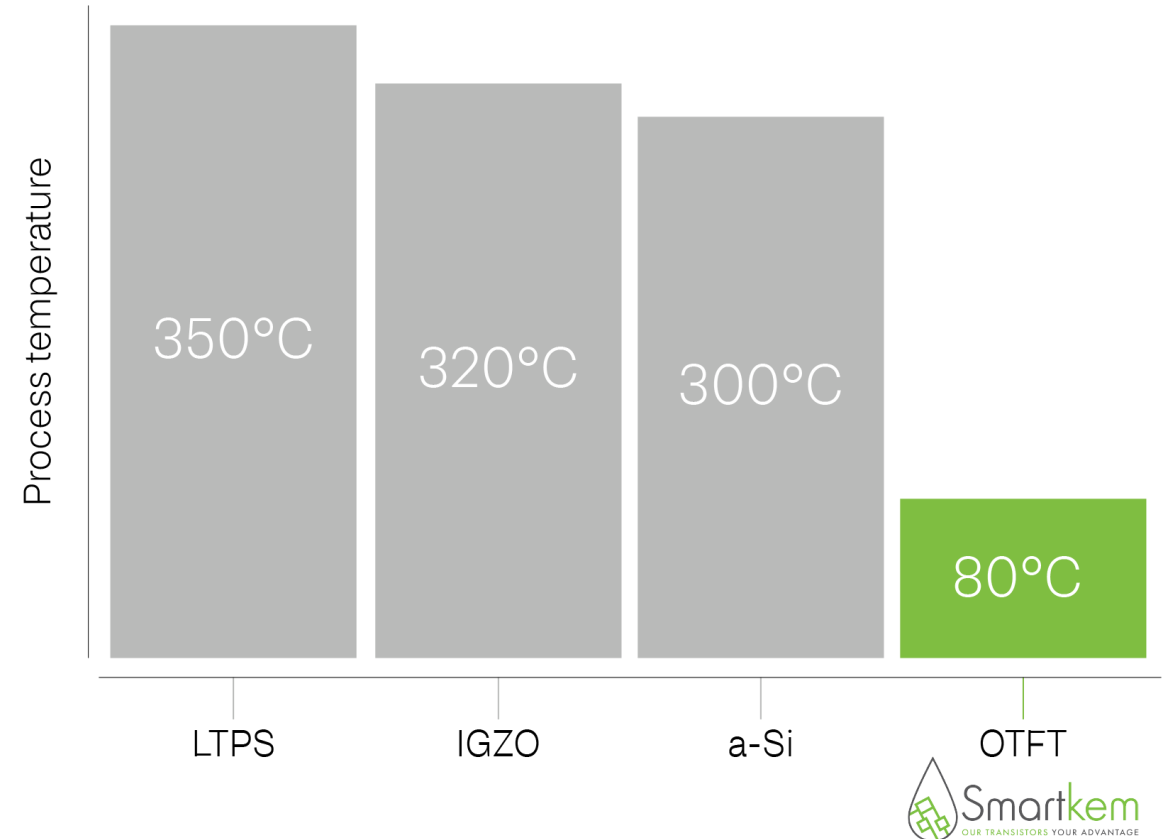
For microLED to be economical we need to be using <20 micron size LEDs for TV applications



What's unique about SmartKem's transistors -

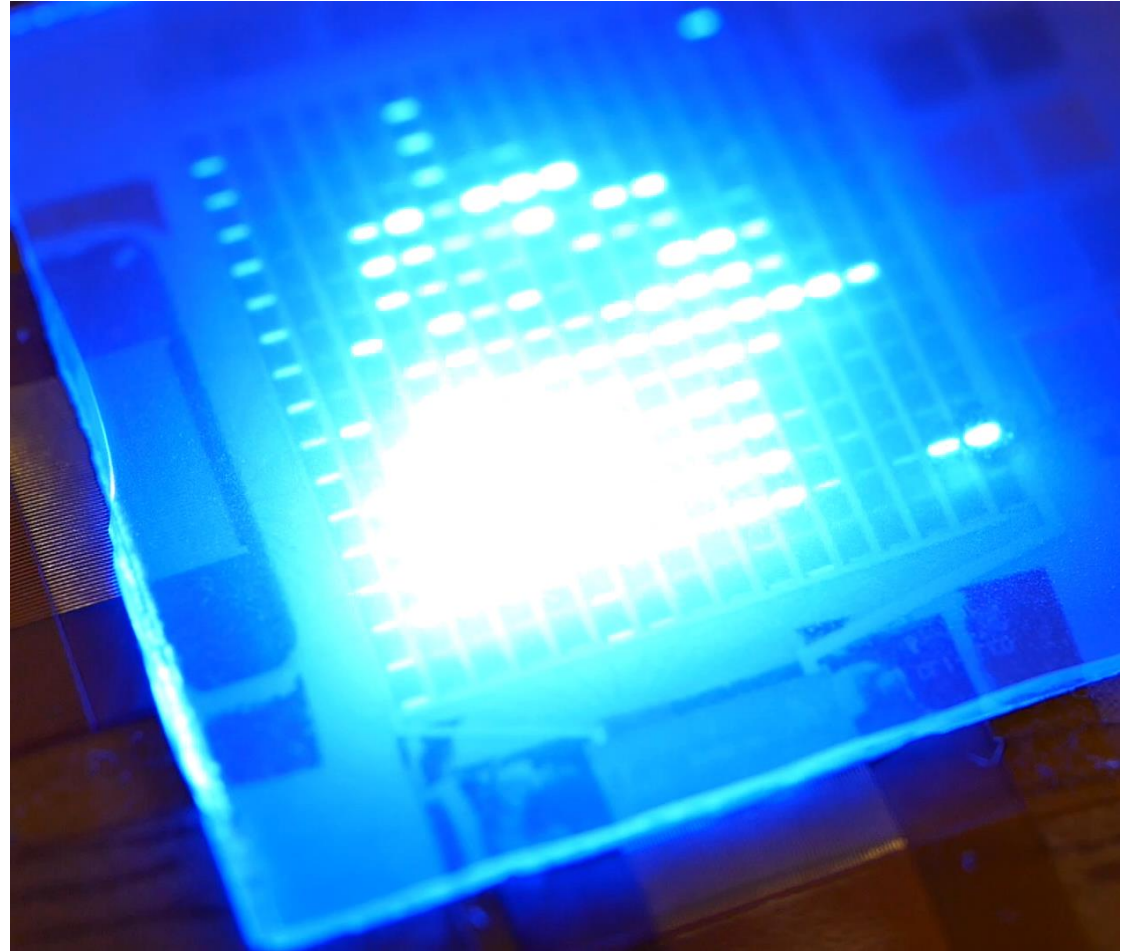
Low processing temperature

- High temperature processing will damage LEDs
- SmartKem processes at 80°C
- Scalable solution-based process
- Uses existing manufacturing infrastructure



MicroLED Monolithically Integrated transistors – **It works**

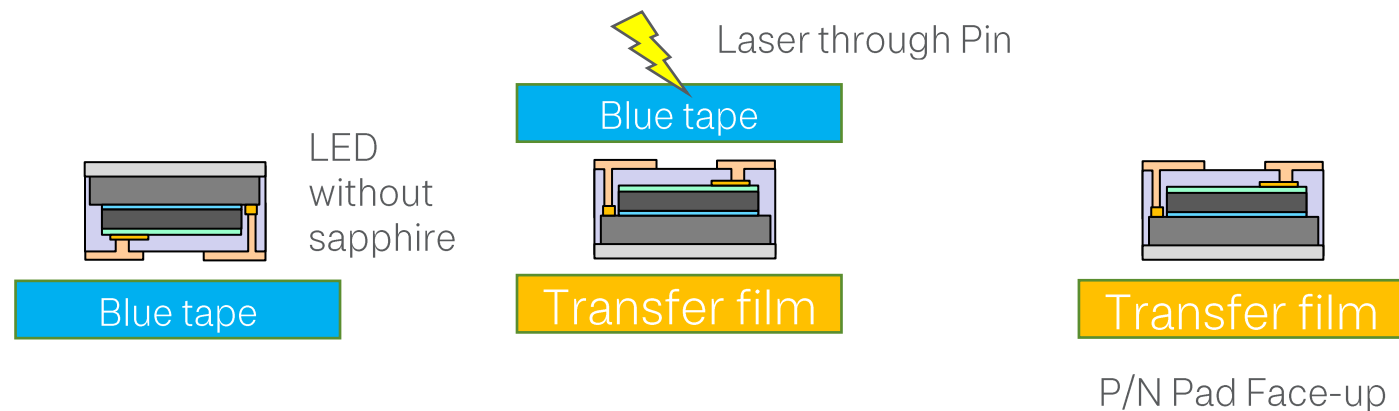
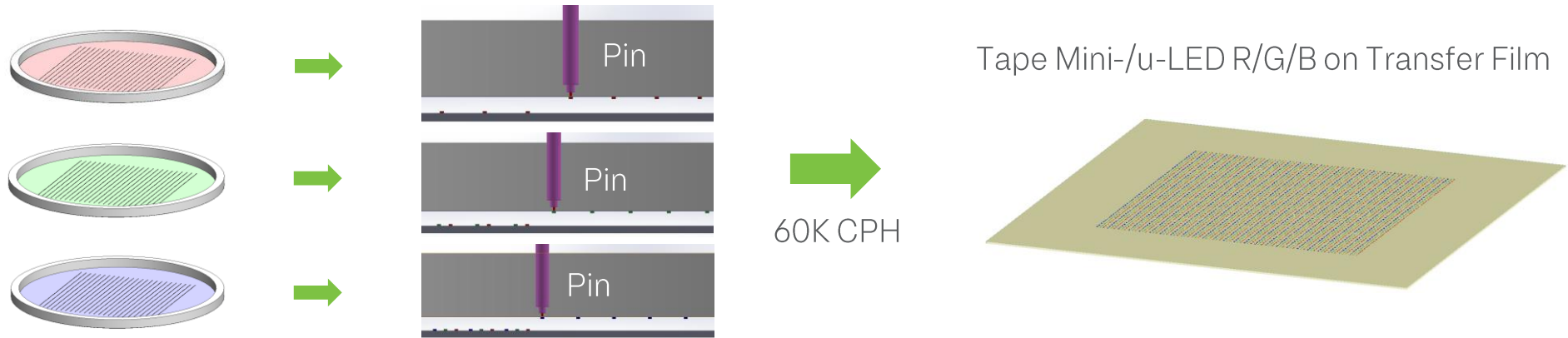
- Low temperature process
- Standard process equipment
- Initial demos tested to >100K nits



Mini/MicroLED Monolithically Integrated OTFT at large scale

Mini/MicroLED Chip on Transfer Film process

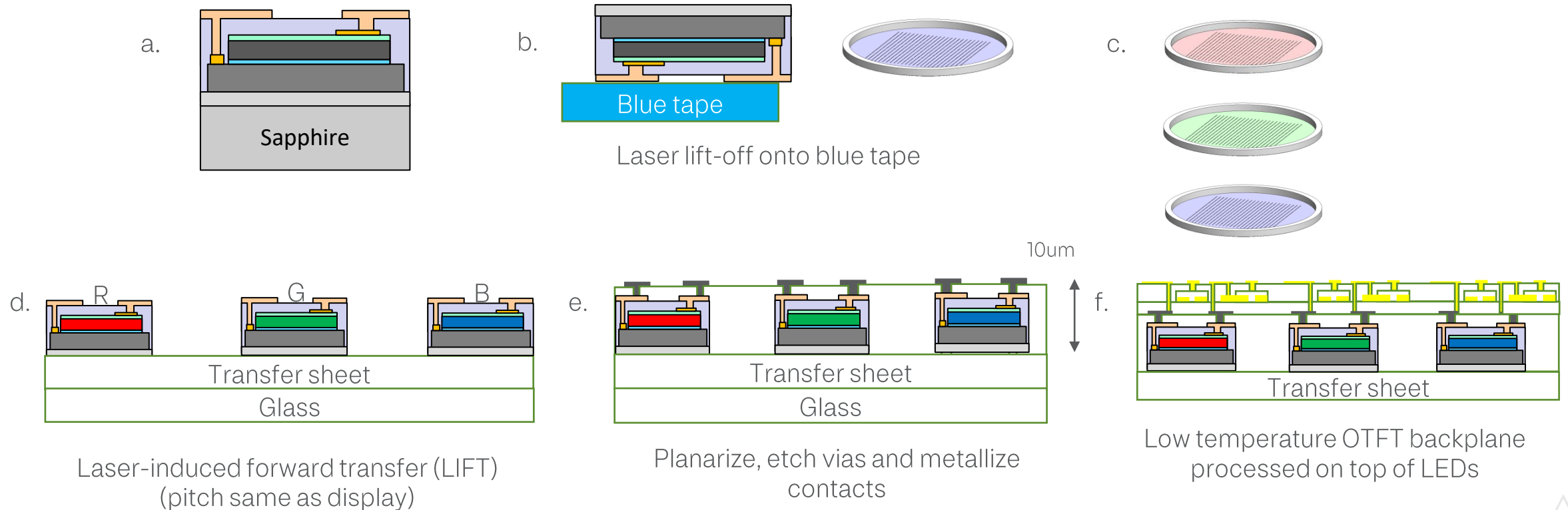
6inch Blue Tape Mini-/u-LED R/G/B



Reducing the μ -LED Cost

Part Transfer, Part Monolithic Process

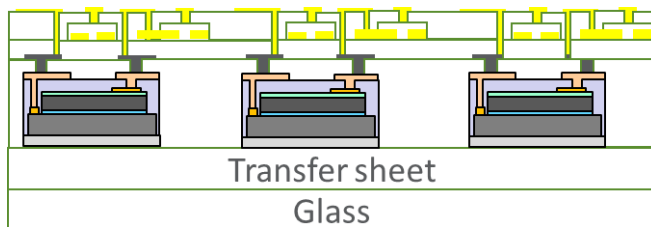
Processing OTFT on the transfer sheet will be the best way to achieve good display size scalability at low GaN cost



Advantages of chip first MicroLED displays

Lower cost emitters

Can use much smaller flip chip u-LEDs immediately 30x15um instead of 34x85um (84% reduction in GaN wafer cost)



Flexible microLED display

Transfer sheet is a flexible film that can be removed from the glass carrier

Monolithic single sided architecture

No side wiring required - Driver attach CoF can be on TFT side (since light is emitted through the substrate)

Lower driver cost

Substrate scalability

OTFT can use a-Si line tools so can scale to larger Gen sizes if transfer sheet substrate can be made at larger size

Moves away from the constraints of an LTPS processing environment

Option to move to larger Gen depreciated, lower processing cost (per m²) facilities

Higher yield

No laser anneal - contact is made through metallized via in Interlayer Dielectric (ILD)

No thick In/Sn bumping or electroless nickel deposition required

No lift-off processes for patterning

SUMMARY

Best in class Organic Electronic Polymers that are used to make transistors arrays

Demonstrated the ability to drive AMOLED and MicroLED displays

Introducing a way of manufacturing Monolithic MicroLEDs at large scale



THANK YOU



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