Smartkem

OUR TRANSISTORS YOUR ADVANTAGE

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.

Reshaping the World of Electronics | OTCQB: SMTK

Disruptive TRUFLEX® Technology

A revolutionary semiconductor platform for Organic Thin Film Transistors (OTFTs).

TRUFLEX® is a full transistor stack design and process platform that produces transistors that are flexible, bendable, wearable, and lightweight.

Materials are solution deposited on low-cost plastic and glass at a low temperature (80°C) to make transistor circuits with performance significantly beyond amorphous Silicon (aSi).

TRUFLEX® materials are compatible with existing industry standard manufacturing infrastructure and next generation printing processes.

Monolithic process for sunlight readable microLED displays.

The platform can also be used in several applications including AMOLED displays, Quantum Dot displays and integrated logic circuits.

World Class Technology Team

40 full time employees with 200+ combined years industrial and R&D pedigree at ICI, Merck, Philips, Kodak, CDT, Motorola.

Extensive, Broad and Defendable IP Portfolio

>175 patents across 17 patent families – 125 granted and ~50 pending

40 codified trade secrets

Collaborations

Enabling customers to make new an innovative products

2021 - JDA with RiTdisplay for the production of a full color demonstration AMOLED display.

2022 – JDA with Nanosys for new generation quantum dot materials for advanced displays.

2022 – Additional JDA for the development of a new generation of miniLEDs signage

Design & Prototyping Capability

Material supply scaled up at toll manufacturers.

EDA design tools available to enable customers to synthesize circuits.

Prototyping available on 4in, 8in, 12in and Gen 2 processes.

Monolithic process for sunlight readable microLED displays

Investor Confidence

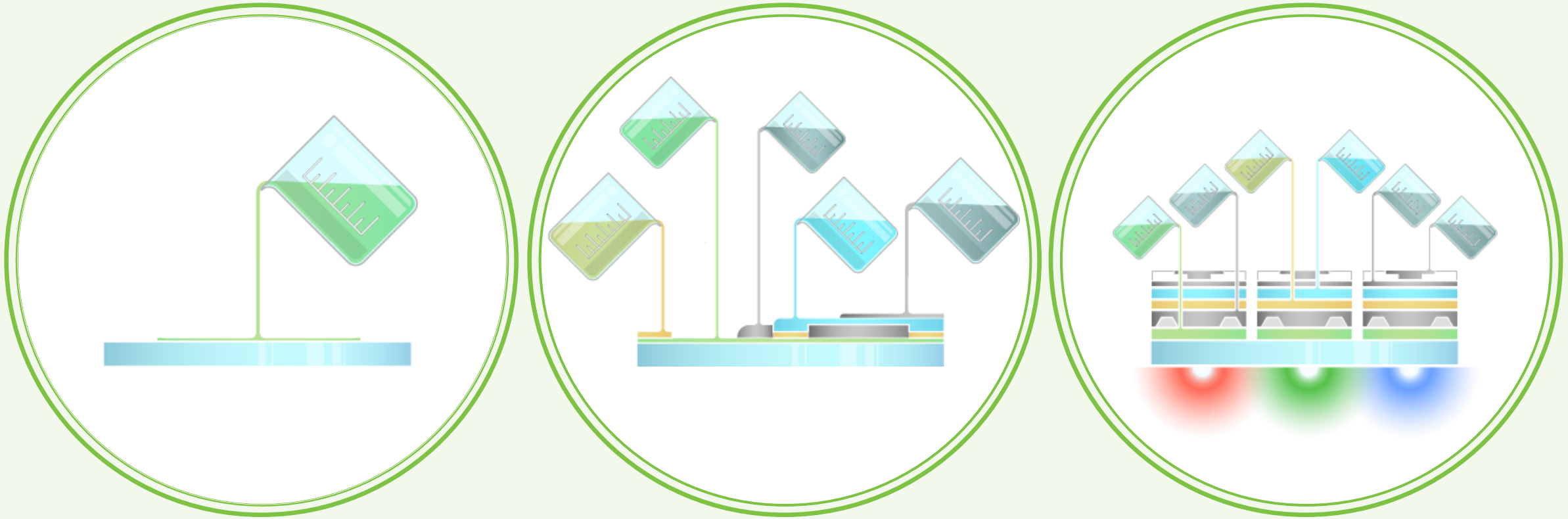
Funding History

In February 2021, SmartKem raised $24.6 million in gross proceeds through a private placement of common stock-only at $2.00 per share.

To date, over $60 million has been invested in SmartKem.

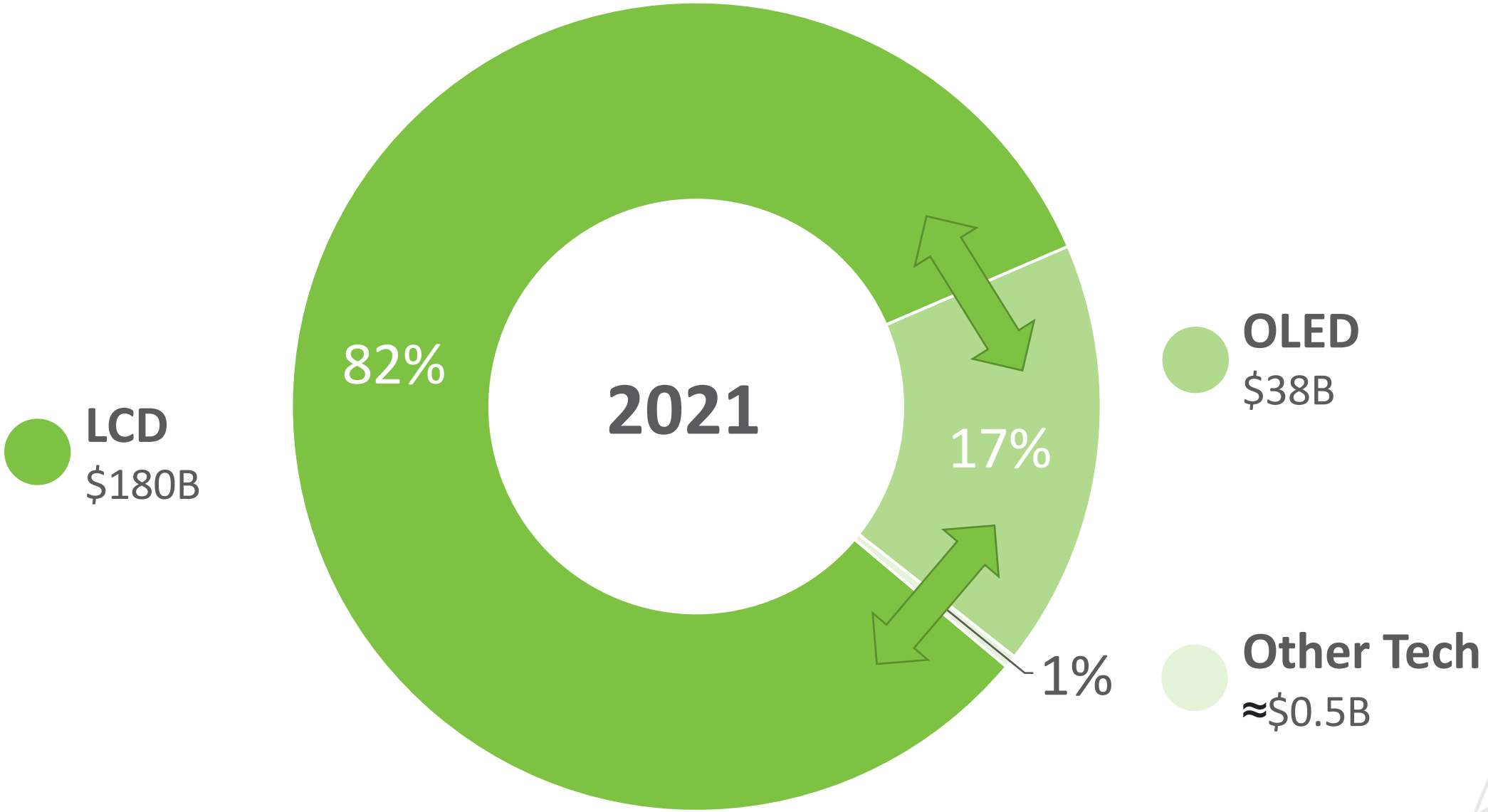
Institutional investors include AIGH, Octopus Ventures, Entrepreneurs Fund LP, and BASF Ventures.

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



Sell materials, licence processes and fields of use

We are targeting the display market



- Today, there is no display solution available (large or small), with good enough performance,at a low enough cost, to enable the ubiquitous adoption of enhanced reality (Metaverse)
- The market is open for change

MicroLED based displays can solve this problem

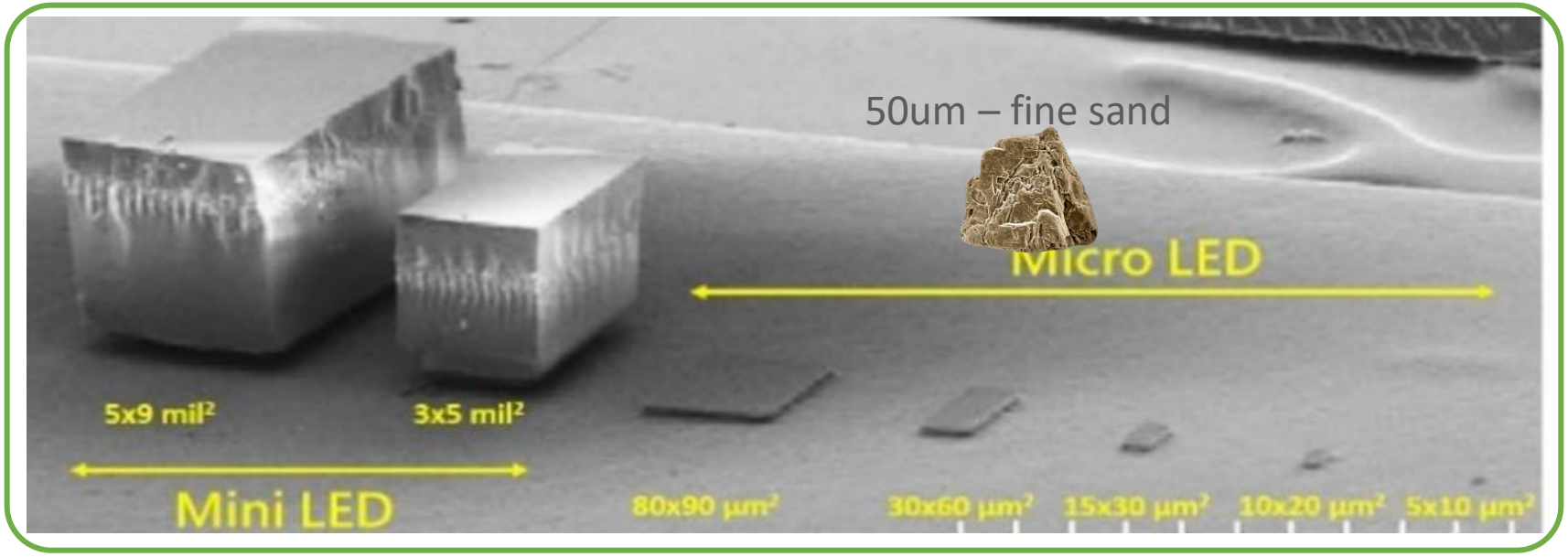
Display	LCD	OLED	µ-LED
Efficient light source	Yes	No	Yes
Self-emissive	No	Yes	Yes
Brightness [nits]	3K	1K	>100K
Power saving vs LCD	N/A	30%—40%	90%
Operating lifetime [years] (continuous on use)	7	2.5-3.5	9-11
Sunlight readability *	Poor (except reflective LCD)	Average	Excellent

MicroLED displays are the only solution that enable sunlight readable
displays with low power consumption and long lifetimes for watches, phones, laptops and TVs

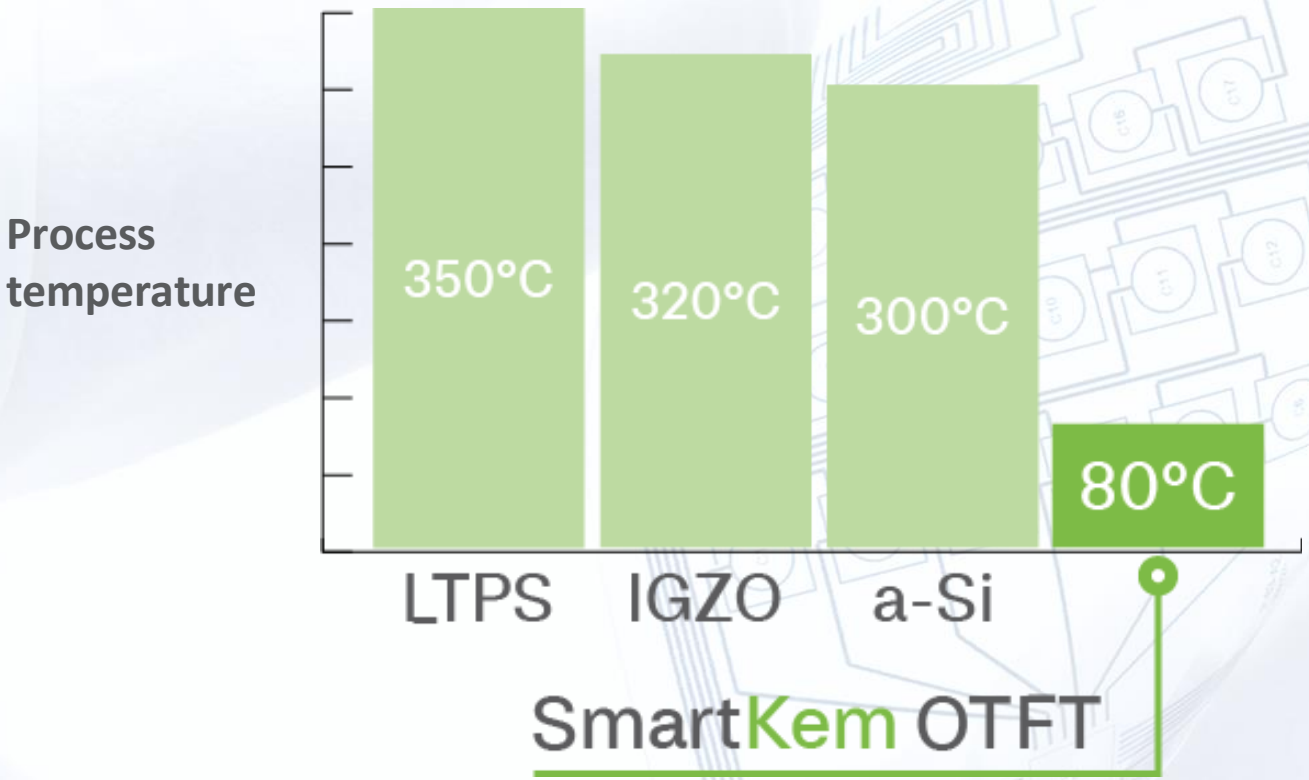
The problem: MicroLED displays are very, **very** difficult to make

You have to put together two large sheets of glass, one covered in 24 million **very small** microLEDs aligned with one covered in 24 million **very small and expensive** transistors, and then push them together at just the right pressure and laser weld them.

- Low yields
- Lots of rework
- Not scalable

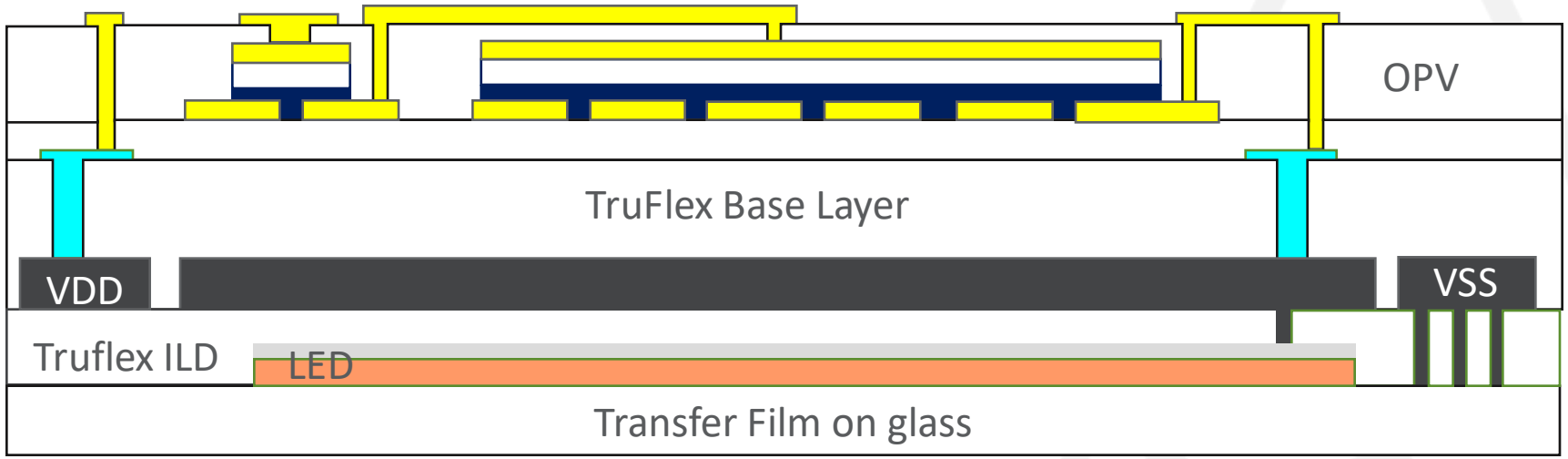


What's unique about SmartKem's transistors – low processing temperature



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

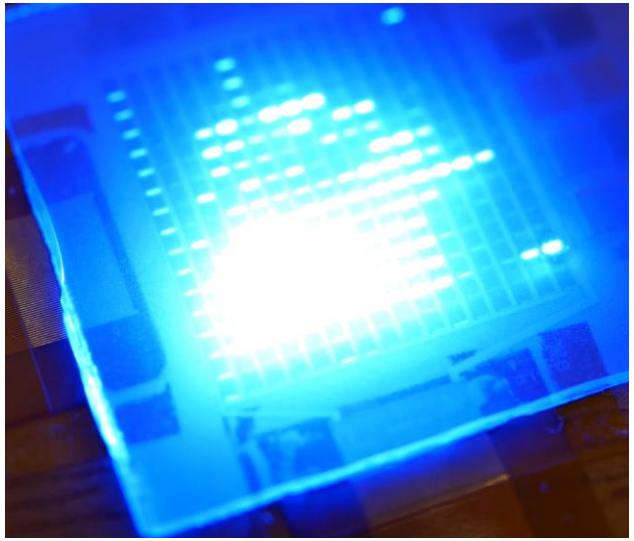
SmartKem's solution: Monolithically integrate the transistors on top of the microLEDs



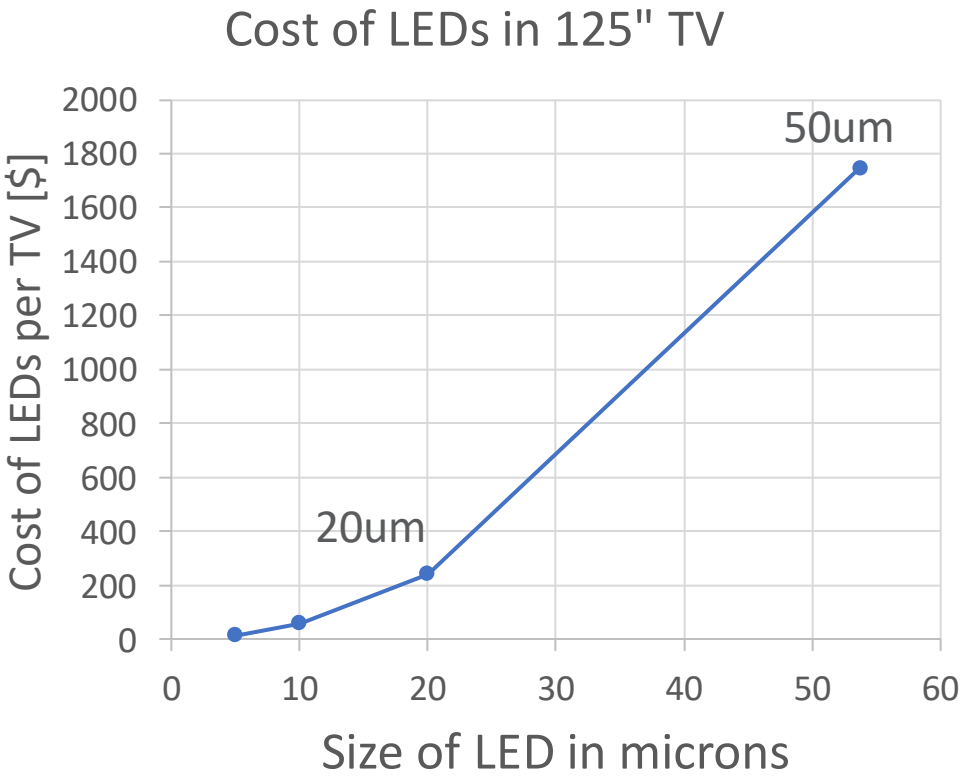
- Single glass or plastic substrate
- Low cost scalable transistor process
- Alignment using standard photolithography
- Electrical connection guaranteed
- High yielding process
- Low cost

MicroLED Monolithically Integrated transistors - it works

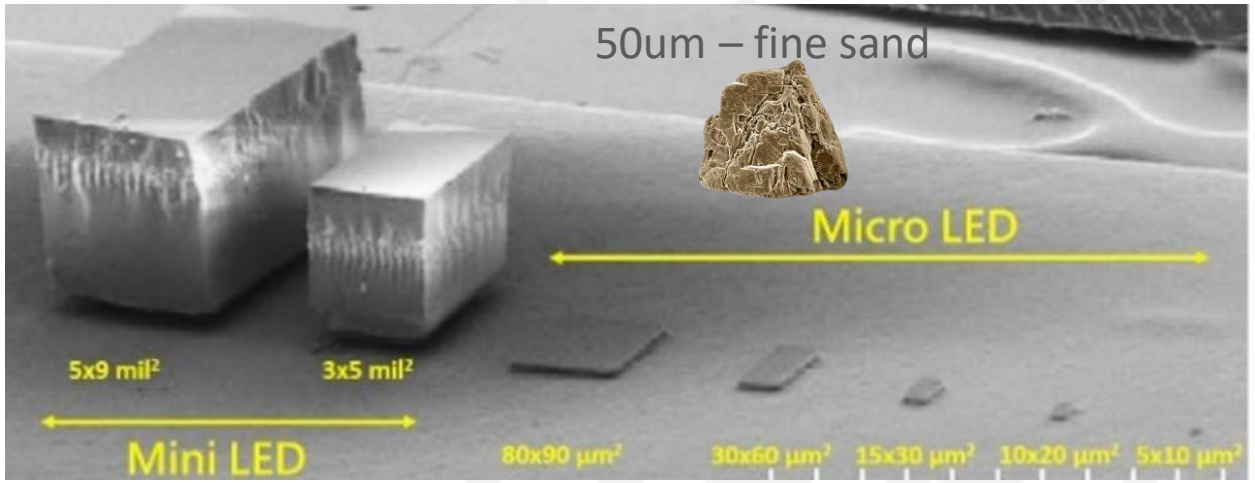
- Low temperature process
- Standard process equipment
- Initial demos tested to **>100K nits**.



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



- For micro-LED to be economical we need to be using <20 micron size LEDs for TV applications



Monolithic process allows the use of the smallest Micro LEDs

The market is listening

semiconductorTODAY
COMPOUNDS & ADVANCED SILICON

SmartKem creates first monolithic micro-LED display using organic thin-film transistors

UK-based electronics materials and process technology firm SmartKem claims that it has created the first monolithic micro-LED display using organic thin-film transistors (OTFTs).

eeNews ANALOG

SmartKem Ltd. (Manchester, England) has announced a monolithic microLED display made using organic thin-film transistors (OTFTs).

It is reported that SmartKem's method of laying down an OTFT backplane on top of gallium nitride LEDs has the potential to accelerate the commercialization of microLED displays.

NEWS WIRE

SmartKem creates monolithic microLED display

By Cassandra Coyle • January 9, 2023 • Reading Time: 2 minutes

SmartKem Ltd. (Manchester, England) has launched a monolithic microLED present made using pure thin-fi transistors (OTFTs).

It is reported that SmartKem's methodology of laying down an OTFT backplane on excessive of gallium nitride LEDs has the potential to hurry up the commercialization of microLED exhibits.

CS COMPOUND SEMICONDUCTOR

SmartKem uses semiconductor inks to process transistors directly on top of GaN LEDs

SmartKem, a company based in Manchester UK, has announced the world's first monolithic micro-LED display using organic thin-film transistors (OTFTs). It says this new method of processing a thin-film transistor backplane on top of GaN LEDs has the potential to accelerate the commerc LED displays.

iPhoneWired

Micro LED rumored to be installed in Apple Watch Ultra in the future ~ British company develops new model

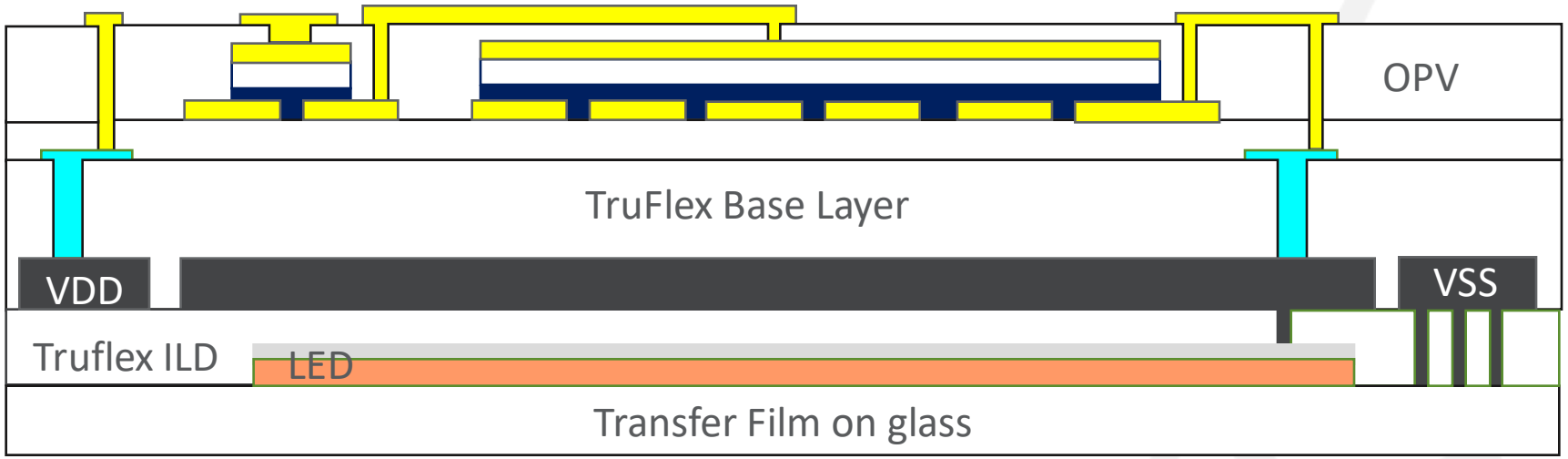
LEDinside LED 在线

SmartKem released the first OTFT Micro LED display

2023-01-16 10:50:19 [edit: Akwan]

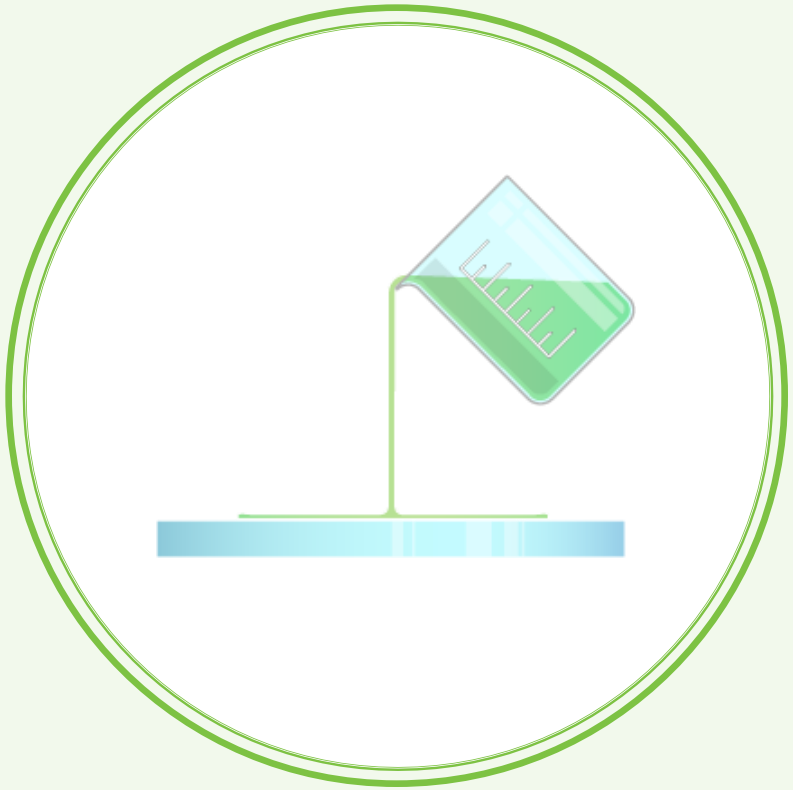
Recently, foreign media reported that SmartKem, a supplier of organic thin film transistor (OTFT) materials, announced the launch of what it claims is the world's first monolithic Micro LED display using OTFT. SmartKem said that this new method of processing thin-film transistor backplanes on GaN LEDs can reduce the manufacturing cost of Micro LED displays and accelerate their commercialization.

Total available market for SmartKem materials

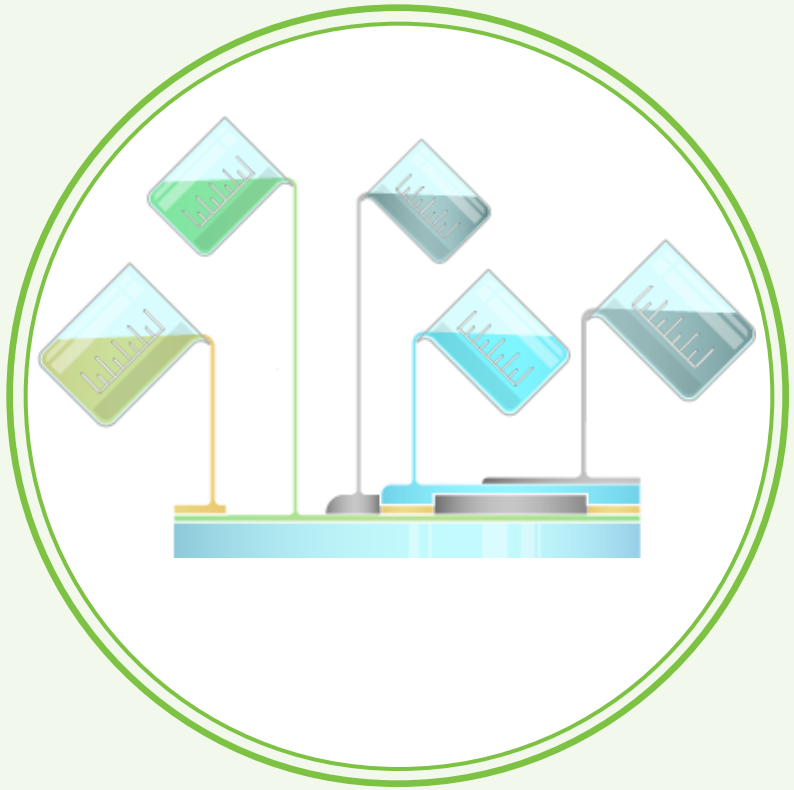


targeting the battle
between LCD and OLED
TAM $3.2B in 2022
TAM $4.4B in 2026

Customer Engagements



Three customers in single layer testing for existing products



Two customers JDAs for transistor backplane development for existing products

One customer JDA for Micro LED display

SMARTKEM FINANCIAL OVERVIEW

- OTC: SMTK
- Shares outstanding[1]: 26.9M

- Cash[1]: $6.3M
- 2022 YTD operating cash burn[1]: $6.8M

- Debt: None

[1]as of September 30, 2022

SmartKem Officers

Ian Jenks
Chairman and Chief Executive Officer

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 has been a director of Techstep ASA, Paysafe plc., and Brady plc.

Barbra Keck
Chief Financial Officer

Barbra served as the Chief Financial Officer of Deverra Therapeutics, Inc., a developer of cell therapies. She held positions of increasing responsibility at Delcath Systems, Inc., an interventional oncology company, starting as Controller and ultimately becoming a senior vice president in March 2015 and chief financial officer in February 2017.

Dr. Beverley Brown
Chief Scientist

Beverley has worked in R&D at Imperial Chemical Industries Ltd. ("ICI"), Zeneca Group PLC and at the Avecia Group PLC. Beverley has worked in the field of organic semiconductor technology and in printable electronics for almost 20 years.

Dr. Simon Ogier
Chief Technology Officer

Simon has previously worked at Avecia, Merck, CPI and more NeuDrive Limited. He currently manages a team of 19 engineers and scientists using the equipment for SmartKem's process development and prototype fabrication. Simon has co-authored 30 journal articles and has been co-inventor on 16 patent families.

Sri Peruvemba
Chief Marketing Officer

Previously Chief Marketing Officer for E Ink Holdings, Sri played a major role in transforming the $15M start-up to a $1B+ global company. With over 30 years experience in technology, Sri has held senior level positions at Sharp Corp, TFS Inc., Planar Systems and Novasentis.

SmartKem Board of Directors

Ian Jenks
Chairman and Chief Executive Officer

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 has been a director of Techstep ASA, Paysafe plc., and Brady plc.

Klaas De Boer
Director

Klaas serves as the Managing Partner of Entrepreneurs Fund Management LLP. He served on numerous boards, including Lifeline Scientific Inc. and Heliocentris Energy Solutions AG. He currently chairs AIM listed Xeros Technology Group plc, and General Fusion, Inc., and serves on the boards of vasopharm GmbH and D3O Holdings Ltd.

Barbra Keck
Director

Barbra served as the Chief Financial Officer of Deverra Therapeutics, Inc., a developer of cell therapies. She held positions of increasing responsibility at Delcath Systems, Inc., an interventional oncology company, starting as Controller and ultimately becoming a senior vice president in March 2015 and chief financial officer in February 2017.

Dr. Steven DenBaars
Director

Steven is a Professor of Materials and Electrical and Computer Engineering as well as the Executive Director of the Solid State Lighting and Energy Electronics Center at the University of California, Santa Barbara. Steven has previously worked at the Hewlett-Packard Optoelectronics team. He has been a Director on the Board of several startup companies which include Soraa Laser Diode, Akoustis Technologies and Aeluma Inc.

Reshaping the World of Electronics | OTCQB: SMTK

Disruptive TRUFLEX® Technology

A revolutionary semiconductor platform for Organic Thin Film Transistors (OTFTs).

TRUFLEX® is a full transistor stack design and process platform that produces transistors that are flexible, bendable, wearable, and lightweight.

Materials are solution deposited on low-cost plastic and glass at a low temperature (80°C) to make transistor circuits with performance significantly beyond amorphous Silicon (aSi).

TRUFLEX® materials are compatible with existing industry standard manufacturing infrastructure and next generation printing processes.

Monolithic process for sunlight readable microLED displays.

The platform can be used in several applications including AMOLED displays, Quantum Dot displays, mini / microLED displays, and integrated logic circuits.

World Class Technology Team

48 full time employees with 200+ combined years industrial and R&D pedigree at ICI, Merck, Philips, Kodak, CDT, Motorola.

Extensive, Broad and Defendable IP Portfolio

>175 patents across 17 patent families – 125 granted and ~50 pending

40 codified trade secrets

Collaborations

Enabling customers to make new an innovative products

2021 - JDA with RiTdisplay for the production of a full color demonstration AMOLED display.

2022 – JDA with Nanosys for new generation solution printed microLED and quantum dot materials for advanced displays.

2022 – Additional JDA for the development of a new generation of miniLEDs signage

Design & Prototyping Capability

Material supply scaled up at toll manufacturers.

EDA design tools available to enable customers to synthesize circuits.

Prototyping available on 4in, 8in, 12in and Gen 2 processes.

Monolithic process for sunlight readable microLED displays

Smartkem

OUR TRANSISTORS YOUR ADVANTAGE

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