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Smartkem

SMARTKEM ANNOUNCES JOINT DEVELOPMENT AGREEMENT WITH TIANMA

MANCHESTER, England, Feb. 20, 2024 /PRNewswire/ -- Smartkem, Inc. (OTCQB:SMTK), a company seeking to reshape the world of electronics with its disruptive organic thin-film transistors (OTFTs) that have the potential to drive the next generation of displays, today announced that it has entered into a joint development agreement with Shanghai Tianma Microelectronics Co., Ltd. to integrate Smartkem's Organic Thin-Film Transistor (OTFT) technology with Tianma's oxide transistors to develop OTFT-based microarray biochips.

Devices made using the combination of complementary transistor polarities (CMOS) will include logic gates, both analog and digital, and these will be used to amplify and process signals generated by TFT-based sensor devices.

Smartkem Chairman and Chief Executive Officer, Ian Jenks comments, "This project is expected to demonstrate that Smartkem's unique technology can be used successfully to develop a new type of biochip using our OTFTs and Tianma's backplane. If successful, this collaboration could create another important market for our technology."

Whilst CMOS devices using oxide and OTFT have been trialled before with promising results published in scientific journals, this will be the first time that Smartkem's OTFTs will be combined with oxide transistors in a commercial setting. The high charge mobility organic transistors of Smartkem at short transistor channel lengths, which represents its ability to drive current, is intended to surpass the performance of previous test results of the OTFT/oxide combination. If successful, the company believes that the integration of OTFT on oxide will open the possibility of large area, high noise margin, low power logic devices for a range of sensor and internet of things (IOT) applications that do not require high frequency operation of CMOS silicon devices.

Oxide transistors are already scaled to Gen 8.5 substrates (2.25m x 2.5m) and Smartkem's solution processable OTFT is compatible with amorphous silicon (a-Si) process lines. a-Si processes currently run on Gen 10.5 substrates which are 2.94m x 3.37m in size. The overall production cost of the logic devices using organic-oxide CMOS is anticipated to be substantially lower than for silicon of the same size due to the low cost per area processes used for TFT fabrication. This is due to the substrate size difference, the largest Gen10.5 substrate being 135X larger in area than a 12" wafer.

The project involves collaborative work with Prof Xiaojun Guo's group at Shanghai Jiao Tong University (SJTU), which will be responsible for device architecture, process-to-design methodologies, and sensor integration. SmartKem and SJTU recently published a joint paper in Nature Communications on their work to integrate OTFT with III-V semiconductor micro-LED wafers for high brightness displays.

To read the Nature Communications article, visit:www.nature.com/articles/s41467-023-42443-8

About Smartkem, Inc.

Smartkem is seeking to reshape the world of electronics with its disruptive organic thin-film transistors (OTFTs) that have the potential to drive the next generation of displays. Smartkem's patented TRUFLEX® semiconductor and dielectric inks, or liquid electronic polymers, can be used to make a new type of transistor that has the potential to revolutionize the display industry. Smartkem's inks enable low temperature printing processes that are compatible with existing manufacturing infrastructure to deliver low-cost displays that outperform existing models. The company's electronic polymer platform can be used in a number of display technologies including microLED, miniLED and AMOLED displays for next generation televisions, laptops, augmented reality (AR) and virtual reality (VR) headsets, smartwatches and smartphones.

Smartkem develops its materials at its research and development facility in Manchester, UK and its semiconductor manufacturing processes at the Centre for Process Innovation (CPI) at Sedgefield, UK, It has a field application office in Taiwan. The company has an extensive IP portfolio including 125 granted patents across 19 patent families and 40 codified trade secrets. For more information, visit: www.smartkem.com and follow us on LinkedIn www.linkedin.com/company/smartkem-limited and Twitter @SmartkemOTFT.

About Tianma Microelectronics Co., Ltd.

Tianma Microelectronics Co., Ltd. (Tianma) specializes in providing display solutions and associated support services worldwide. Tianma has experience in the display market for four decades.

Tianma has developed and possesses advanced technologies such as TN/STN, TFT-LCD, AMOLED, flexible displays, foldable displays, Mini/MicroLED, touch integration, HTD, CFOT, CUP, under screen fingerprint recognition, and intelligent sensors. The company has established advanced a-Si TFT-LCD, LTPS TFT-LCD, and AMOLED production lines in Shenzhen, Shanghai, Chengdu, Wuhan, Xiamen, Wuhu, and Akita, Japan.

Tianma supports a wide range of applications, e.g. displays for smart mobile terminals and vehicles, IT displays, professional displays, and non display. The company is committed to continuous innovation and better serving the differentiated needs of customers and applications.

Forward-Looking Statements

All statements in this press release that are not historical are forward-looking statements, including, among other things, statements relating to the Smartkem's expectations regarding its market position and market opportunity, expectations and plans as to its product development, manufacturing and sales, and relations with its partners and investors. These statements are not historical facts but rather are based on Smartkem Inc.'s current expectations, estimates, and projections regarding its business, operations and other similar or related factors. Words such as "may," will," "could," "would," "should," "anticipate," "predict," "potential," "continue," "expect," "intend," "plan," "project," "believe," "estimate,"

and other similar or elated expressions are used to identify these forward-looking statements, although not all forward-looking statements contain these words. You should not place undue reliance on forward-looking statements because they involve known and unknown risks, uncertainties, and assumptions that are difficult or impossible to predict and, in some cases, beyond the Company's control. Actual results may differ materially from those in the forward-looking statements as a result of a number of factors, including those described in the Company's filings with the Securities and Exchange Commission. The Company undertakes no obligation to revise or update information in this release to reflect events or circumstances in the future, even if new information becomes available.

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