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Spin Transfer Technologies and Tokyo Electron join forces to bring MRAM to the next level

SRAM-like ST-MRAM brings significant cost and power benefits over conventional SRAM

Boston - 16 October 2017 - Allied Minds (ALM: LSE) subsidiary Spin Transfer Technologies, Inc. (STT) and Tokyo Electron Ltd. (TEL) are pleased to announce that they have today signed an agreement for a collaborative engineering program for next-generation SRAM and DRAM-class ST-MRAM devices. The agreement will further the advance of ST-MRAM, a new class of high-performance, persistent memory devices, to provide previously unachievable levels of speed, density, and endurance. The combination of STT's ST-MRAM technology and TEL's advanced PVD MRAM deposition tool will allow the companies to quickly develop processes for the highest density and endurance devices. Both companies are allocating resources to this project, with STT contributing its high-speed, high-endurance perpendicular magnetic tunnel junction (pMTJ) design and device fabrication technology, and TEL utilizing its industry-leading ST-MRAM deposition tool and knowledge of unique formation capabilities of magnetic films. This agreement aligns with each company's goal of offering compelling solutions for the embedded SRAM, and eventually stand-alone DRAM, markets.

SRAM is pervasive in nearly all mobile, computing and industrial applications. SRAM is a fast and high-endurance memory, but it is costly, drains much power and is volatile. ST-MRAM, being more compact, is less costly, requires little power when storing data and is nonvolatile, retaining data for long periods without power. Further improvements especially in terms of fast switching and endurance are needed, however, to fully match or exceed SRAM performance.

STT and TEL will demonstrate solutions that are far denser than other ST-MRAM solutions while eliminating barriers to replacing SRAM. These sub-30nm pMTJ's, 40 to 50 percent smaller than other commercial solutions, should be attractive to advanced logic-ICs and a significant step toward making DRAM-class ST-MRAM devices.

"Industries have outgrown the capabilities of SRAM and DRAM leaving the market open for the next generation of technology," said Tom Sparkman, CEO of STT. "Having TEL, the world's leading ST-MRAM deposition equipment supplier, as a partner speeds up the development of STT's technology for replacing SRAM and DRAM. We believe the adoption of ST-MRAM will materially exceed current expectations, and we are excited to work with TEL to revolutionize the ST-MRAM market by achieving the speed, density and endurance the industry needs."

"Together with STT's team of experts, device fabrication know-how and its on-site development fab, we expect to accelerate the development of high-performance, high-density MRAM devices for the SRAM market and ultimately the DRAM replacement market." said Yoichi Ishikawa, vice president, PVD Dept. of TEL's Thin Film Formation Business Unit. "We thank STT for recognizing the performance of and for choosing our advanced MRAM deposition system for this purpose."

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About Allied Minds
Based in Boston, Allied Minds plc is an IP commercialisation company focused on technology and life sciences. With extensive access to U.S. federal government laboratories and universities, as well as partnerships with leading U.S. corporations, Allied Minds forms, funds, and operates a portfolio of companies with the objective of delivering successful liquidity events that will generate attractive long-term returns for its investors and stakeholders. Allied Minds supports its businesses with capital, resources, and expertise. For more information, please visit www.alliedminds.com

About Spin Transfer Technologies
Spin Transfer Technologies, Inc. (STT) is developing ST-MRAM technologies that uniquely combine patented magnetics technologies, circuits and memory architectures to create the industry's lowest-cost, highest-performance ST-MRAM memories. STT's disruptive ST-MRAM solutions are ideal replacements for embedded SRAMs as well as future DRAM devices. The company was established by Allied Minds and New York University. For more information, please visit www.spintransfer.com

About TEL

Tokyo Electron Limited (TEL), established in 1963, is a leading company of innovative semiconductor and flat panel display (FPD) production equipment worldwide. All of TEL's semiconductor and FPD production equipment product lines maintain high market shares in their respective global segments. TEL has research & development, manufacturing, sales, and service locations all over the world. For more information, please visit www.tel.com

About SRAM
SRAM is pervasively used in virtually all mobile, computing, and industrial applications. SRAM is a fast memory that never wears out, but has the drawbacks of being very costly, very wasteful of power, and is not persistent. On the other hand, traditional ST-MRAM is much smaller and lower cost, uses no power when storing data, and holds data for a long period when power is removed. Unfortunately, conventional ST-MRAM does not match the benefits of SRAM - it lacks speed and wears out in seconds or minutes of operation rather than operating reliably for over 10 years of continuous use. STT has developed unique technologies to make ST-MRAM have similar lifetime and speed as SRAM.

About DRAM
DRAM is the electronics industry's most widely used memory type and is present in nearly all electronic systems. DRAM is a slower but much less expensive memory than SRAM, and otherwise shares SRAM characteristics of long life, power inefficiency, and lack of persistence.

Allied Minds Forward-Looking Statement
This press release contains statements that are or may be forward-looking statements, including statements that relate to Allied Minds' future prospects, developments and strategies. The forward-looking statements are based on current expectations and are subject to known and unknown risks and uncertainties that could cause actual results, performance and achievements to differ materially from current expectations, including, but not limited to, those risks and uncertainties described in the risk factors included in Allied Minds' regulatory filings. These forward-looking statements are based on assumptions regarding the present and future business strategies of Allied Minds and the environment in which it will operate in the future. Each forward-looking statement speaks only as at the date of this press release. Except as required by law, regulatory requirement, the Listing Rules and the Disclosure Guidance and Transparency Rules, neither Allied Minds nor any other party intends to update or revise these forward-looking statements, whether as a result of new information, future events or otherwise.

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