Nantero Closes $30M+ Series E Round; its Next-Generation Memory NRAM Now Installed in Multiple Production Fabs Around the World

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- NRAM Advantages: Extremely Low Power, Super-Fast, High Density, High Endurance
- Limitless Scalability: Can Scale Below 5 nm to Enable Terabits of Memory in the Future
- Proven Technology: Successfully Used in Mass Production CMOS Fabs for Many Years
- Exciting Future Products: Virtual Screens, Next-Generation Enterprise Systems, Rolled-up Tablets, Instant-On Laptops, 3D Video Phones and other products needing huge amounts of fast memory

WOBURN, MA – JUNE 2, 2015 – Nantero, the world leader in carbon nanotube electronics, today announced it has closed a $31.5 million Series E financing round, which included new investors and participation from existing investors Charles River Ventures, Draper Fisher Jurvetson, Globespan Capital Partners, and Harris & Harris Group. This substantially oversubscribed round highlights Nantero's ongoing success in delivering a new generation of super-fast, ultra-high density memory called NRAM™ (non-volatile random access memory) that can enable a variety of exciting new features and products in both consumer and enterprise electronics.

Signaling a new era in memory, Nantero's NRAM has already been installed in multiple production fabs and is currently being designed into innovative new electronic products that require increased storage, low power consumption, high speed, reliability, and high endurance. The company intends to use its new funding to continue the acceleration of NRAM as the leading next-generation memory for both storage class memory and as a replacement for flash and DRAM.

"With Nantero's NRAM, the wait for a new generation of super-fast, high-density non-volatile memory is over," said Greg Schmergel, Co-Founder, President and CEO of Nantero, Inc. "Our technology is already under development today in multiple world-class manufacturing facilities and we have more than a dozen major corporate partners actively working on NRAM. We are excited to begin the next phase of commercialization which will bring Nantero's NRAM into volume production and change the course of electronics innovation for decades to come."

New Company Advisors

Highlighting the growing industry support for NRAM, Nantero also announced today the addition of two new key advisors to the company, including Dr. Stefan Lai, a previous Intel senior executive who co-invented the EPROM tunnel oxide (ETOX) flash memory cell and led the company's phase change memory (PCM) team. Mr. Lai was recognized as an IEEE Fellow in 1998 for his research

on the properties of silicon MOS interfaces and the development of flash EPROM memory, and he also received the 2008 IEEE Andrew Grove Award for his contribution to flash memories.

“Nantero’s NRAM has unique attributes that make it the most promising candidate to be the almost ideal memory: the nonvolatility of Flash, and the speed and functionality of DRAM with lower cost,” said Stefan Lai, Nantero’s new advisor. “The company has the technology, expertise, deep customer support, and extensive patent portfolio needed to win, and this new funding round will provide the financial resources to ensure their long-term success and continued advancement of NRAM technology.”

Also joining Nantero’s advisory board is Dr. Yaw Wen Hu, a previous Executive VP and current Board member of Inotera Memories, where he oversaw new DRAM technology transfer and development of Wafer Level Packaging. Before that, Dr. Hu was an Executive VP and Chief Operating Officer for Silicon Storage Technology (SST), where he was responsible for SuperFlash technology development, working with a team from a brand new memory cell concept to high volume product shipment and its establishment as the choice of technology for Embedded Flash applications.

Nantero’s NRAM: The Future of Memory

The availability of a new generation of memory that is 100s of times faster than NAND, can deliver terabits of storage capacity, and consumes very little power, has the potential to change the future of electronics. Nantero’s NRAM has all of these breakthrough characteristics. Targeting both the embedded and standalone memory markets, Nantero is already licensing its NRAM IP to major chip manufacturers, foundries and electronics companies around the world.

Targeting a wide range of markets such as consumer electronics, mobile computing, wearables, Internet of Things, enterprise storage, government/military, space, and automotive, Nantero’s NRAM delivers major advantages over other memory technologies. These include:

- CMOS Compatible: Works in standard CMOS fabs with no new equipment needed
- Limitless Scalability: Designed to scale below 5nm in the future
- High-Endurance: Proven to operate for orders of magnitude more cycles than flash
- Faster Read and Write: Same as DRAM, 100s of times faster than NAND
- High Reliability: will retain memory for >1,000 years at 85 degrees Celsius or more than 10 years at 300 degrees Celsius
- Low Power: Essentially zero in standby mode, 160x lower write energy per bit than NAND
- Low Cost: Simple structure, can be 3D multi-layer and multi-level cell (MLC)

Nantero’s NRAM leverages leading-edge research in nanotechnology and the innovative use of carbon nanotube technology, which is considered to be one of the strongest materials known to

man. With one CNT being just 1/50,000th the diameter of a human hair, these tiny cylinders are 50 times stronger than steel, half the density of aluminum, and have better thermal and electrical conductivity properties than any other material scientists are aware of today. As a pioneer in nanotechnology, Nantero is the first company to actively develop semiconductor products using this material in production CMOS fabs. This breakthrough achievement is now protected as part of the company's world-leading carbon nanotube electronics patent portfolio, which consists of more than 175 US patents issued to date and more than 200 patents pending.

Supporting Quotes:

Alan Niebel, Founder and CEO of Webfeet Research

"The availability of memory technology that is extremely fast, can deliver terabits of storage capacity in the future, and consumes very little power, has the potential to change the future of electronics. After researching NRAM for over twelve years, WebFeet applauds Nantero for reducing the costs of the CNTs in an NRAM chip by 10x in the last two years, making NRAM CMOS compatible and finally proving NRAM viability with commercial production capability from its licensees."

Jim Handy, Director of Objective Analysis

"We are impressed with the progress Nantero has made to bring a new generation of memory to market. There is no question that a fast, nonvolatile memory is a valuable asset and Nantero's use of carbon nanotube technology shows great promise as a successor to entrenched technologies as they approach their scaling limit."

Greg Wong, Founder and Principal Analyst with Forward Insights

"This is one of very few technologies that's moved beyond the research lab into high-volume manufacturing CMOS facilities. NRAM's unique combination of high speed and high endurance has the potential to enable innovative products in a host of consumer and enterprise applications."

Michael Yang, Senior Director, Memory and Storage for IHS Technology

"The industry is already starting to feel the effects of current memory technologies hitting performance roadblocks and not being able to scale further. Nantero's NRAM is in a strong position to fill this void, allowing manufacturers to provide new storage architectures and to design smaller, faster and more innovative products packed with massive amount of storage."

Yann de Charentenay, Senior Technology & Market Analyst, Yole Développement

"In Yole Développement's January 2015 Emerging Non Volatile Memory Technology and Market

Trends report, we found that this market was worth $65M in 2014. However, it's now at a crossroads. The choice between STTMRAM, RRAM, NRAM and other technologies for the right emerging NVM should be made in the next two years by the industry's leaders in order to solve traditional DRAM and flash memory's limited scalability and/or speed. In these circumstances, Yole Développement is really excited by Nantero's latest NRAM technical results. Nantero's technology provides both the performance of STTMRAM and potentially the low cost of RRAM. At Yole Développement, we are keen to see the future scalability of this technology that would enable it to target mainstream memory applications and replace DRAM and flash."

Bruce Sachs, General Partner at CRV

"This new round validates the potential we see for NRAM to become the next major breakthrough in the memory industry. Nantero is what many major customers have been waiting for to drive the next wave of consumer electronics and enterprise compute and storage innovation."

Dr. Yaw Wen Hu, Nantero Advisor

"Nantero's breakthrough is not only in developing a new generation memory device with outstanding performance, but also in its success at bringing NRAM into existing CMOS fabs without the need for new equipment. That is an enormous accomplishment and it can pave the way for exciting new features and products in both consumer and enterprise applications."

Additional Resources:

Nantero Corporate Video

Image Library: Product and Technology Photos

Nantero Website

About Nantero

As the world leader in carbon nanotube electronics, Nantero has developed a new generation of memory called NRAM™ (non-volatile random access memory) that can enable a variety of exciting new features and products in both consumer and enterprise electronics. This new super-fast, ultra-high density memory can replace both DRAM and flash in a single chip, or enable new applications as a storage class memory, while

also delivering the low power, high speed, reliability, and endurance needed to drive the next wave

of electronics innovation. Visit Nantero at www.nantero.com or follow Nantero at Twitter @nantero.

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