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NVE fails to provide any support for its Motorola claims.

In last Friday's press release, NVE Corporation (NASDAQ: NVEC, $47.70) claimed that Magnetic or Magnetoresistive Random Access Memory ("MRAM") chips are fabricated using nanotechnology and that spintronics is a nanotechnology. In fact, nanotechnology is not used to fabricate MRAM chips and spintronics is not a nanotechnology. NVE had not used the word nanotechnology in its SEC filings or press releases before July 25, 2003. The mention of the "nano" word coincides with the commencement of NVE's newsletter and Internet based stock promotion, which personally benefited NVE's stock selling leaders James Daughton and Daniel Baker. Perhaps NVE bases its nanotechnology claims on its own definition created for stock promotion purposes.

In the release NVE also said that they "**believe**" Motorola, Inc. (NYSE: MOT, $16.94) is using their intellectual property and that they "**expect**" to get paid. Immediately investors have to be thinking: Why does NVE have those beliefs and expectations? If they are so involved in MRAM shouldn't they know this for a fact? After all, NVE didn't say they "believe" they are in nanotechnology or they "expect" to be in nanotechnology. NVE's statements are wrong but at least they were strongly worded. Could NVE be hiding something? Why don't they disclose some facts? Why are they so desperately trying to convince investors? How can NVE admit that their claim was totally overblown now that we know they sold their stock?

If NVE is as important to spintronics and MRAM's development as they claim their alleged discoveries would be easy to independently verify. They are not. Today, we published two appendices to this research report. **Appendix A** is titled "NVE is not involved in nanotechnology" and explains why spintronics is not nanotechnology. **Appendix B** is titled "NVE's MRAM contribution claims are unfounded." Appendix B identifies eight (8) inventors that materially contributed to the advancement of MRAM beginning 148 years ago and leading to the first commercialization last year. Appendix B describes the earliest mathematical achievements and the most recent manufacturing breakthroughs. It turns out that real valuable inventions are easier to understand and more tangible than NVE's MRAM fantasy-duo James Daughton and Daniel Baker want you to know. The development of MRAM's basic technology and commercialization is an extraordinary story of individual scientific achievement, alliances between great companies, government support and international cooperation. It does not include NVE.

MRAM's history is not a story of nanotechnology. MRAM comes from well understood physics. It involves metal, magnets and semiconductor manufacturing. In this case, knowing that it could be done was not the issue. The memory market is extremely cost competitive. Manufacturing issues and costs still remain MRAM's primary concerns.

As Appendix B shows, NVE is totally absent from the MRAM story. It took about 15 years after the first GMR was sold in a real memory product (not special use imbedded memory but computing memory) for a semiconductor

manufacturer to be able to fabricate a competitive memory chip using spin in metal to replace charges in capacitors. Hundreds of patented and unpatented discoveries led to the new MRAM products.

Whether you study MRAM's early origin or Motorola's most recent manufacturing work, there is no mention of any NVE MRAM invention. There is nothing that indicates, much less verifies, NVE's claim. On the contrary, the evidence points to the exact opposite conclusion. This is not a rich company in poor company clothing. NVE is a genuinely poor company and those that made up the story about it being rich have sold all or most of their stock.

Last Friday afternoon's unwarranted stock reaction to NVE's pathetically weak and unspecific press release only serves to raise questions about NVE's seriousness and intent. Even without the benefit of the MRAM facts disclosed herein and in the accompanying appendices, it seems fair to ask why is NVE's management involved in extremely questionable activities if NVE really does posses something of such great value? We remain fully committed to our opinion that NVE possesses no valuable MRAM intellectual property and that its shares are worth no more that one tenth of their current price.

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Appendix A: NVE is not involved in nanotechnology.

We have all changed the spin of atoms. Holding a magnet near a metal causes the metal's atoms to tilt or change their spin either to the North Pole "up" or to the South Pole "down". This change in spin causes the metal to either increase or decrease its resistance to electrical current. The direction of metal's spin can easily be read by the level of resistance, in the same way that an electron's charge can be read. But electrons lose there charge and have to either be constantly recharged ("DRAM") or wrapped up in insulation ("Flash") to keep them from losing their charge or memory. Once the spin of the metal's electrons is changed by the magnet they stay changed without needing more energy. And there is no wear and tear involved in changing the spin back and forth. This has nothing to do with nanotechnology. This is the field of electronics called **spintronics**.

Yes the Chinese plastics manufacturer that puts a magnet in a molded piece of plastic shaped like a little lady bug so we can hang notes on the refrigerator is in spintronics. Of course, it's harder to use a magnet to change the spin of electrons in a microscopically-thin layer of three metals that are stuck together; much less to place millions of these tiny three-layered-sheets-of-metals on half an inch. And forget about how hard it is to be able to zap one of the millions and change its spin while leaving all its little neighbors alone. Now that's a harder trick to do with a magnet than holding a note onto a refrigerator. But we bet that someone at IBM and Motorola is thinking hard about how long it will take Chinese semiconductor manufacturers to figure out the trick. But do you really think that any one at IBM or Motorola is thinking about NVE and its clueless MRAM fantasy-duo James Daughton and Daniel Baker? Oh stop.

This is an appendix to a research report of the same date titled "**NVE fails to provide any support for its Motorola claims**."

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Appendix B: NVE's MRAM contribution claims are unfounded.

The following report names the leading contributors to MRAM from the earliest theoretical work through the design and manufacturing of today's MRAM chips. It forms a dateline of inventions and manufacturing experiments leading to MRAM's recent commercial introduction. This MRAM historical outline is referred to in a separate report titled "**NVE fails to provide any support for its Motorola claims**."

In 1856 British physicist **Lord William Thomson** discovered that metals change their resistance to electrical current when they are close to or are touched by a magnet. Later, after the development of quantum mechanics in the 1920s, this discovery was defined as **magnetoresistance**. But it was another British physicist, **Paul Dirac**, who is generally accepted as the father of spintronics. In 1928 Dirac proved that electrons possess a unique quantum-mechanical property other than there charge that is known today as "spin." Thomson and Dirac's work led directly to today's MRAM products.

By 1988, **Albert Fert**, a physicist at the University of Paris, was using magnets to magnify a metal's magnetoresistance by layering thin metal sheets together and then magnetizing the metals. His invention is called **Giant MagnetoResistance** ("GMR"). Fert's work was backed by Siemens, Thomson and Philips Electronics. He also worked with **Peter Grunberg** of the Institute of Solid State Research in Julich, Germany and Japan's Hitachi Ltd. invested heavily in this invention.

GMR was another area in which NVE claimed to be a leader. Unfortunately for NVE, Motorola's MRAM does not use GMR. Motorola uses an entirely different system called **Magnetic Tunnel Junction** ("MTJ"), which is far smaller and more effective than the layers of metals and magnetizing scheme.

Also in 1988 a fourth British physicist **Stuart Parkin** went to a meeting in Le Cresot, France. Parkin was 32 when he heard Fert speak about measuring the change of electrical resistance of a metal in the presence of a magnetic field. Within a few years Parkin had perfected the technology. IBM has built an $8 billion hard disk drive business using GMR. Parkin received IBM's highest research and development award and prizes from the Industrial Application of Physics, American Physical Society and the European Physical Society.

Parkin worked on IBM's MRAM development. Many of the tools he used to create and test MRAM materials cost multiples of what NVE has raised in its entire lifetime. Other pioneers include **Gary Prinz** and **Mark Johnson**, both of the U.S. Naval Research Laboratory. Prinz worked on early MRAM fabrication schemes and Johnson has been credited with creating the **first spintronics transistor**.

The most recent significant discovery was made by the Russian-educated physicist **Leonid Savtchenko** of Motorola. Savtchenko, who died three years ago at the age of 35, invented what has come to be known as the "Savtchenko Switching," which led to the Motorola MRAM toggling feature that can flip a spin on one piece of the layered metal while protecting adjacent pieces of the layered metals from flipping by accident. This was a highly important development, which some believe allowed Motorola to have enough belief that they can manufacture MRAM chips, at least simple ones, cheaply enough to offer samples to customers for testing.

Distribution of samples from initial manufacturing batches to customers only marks the beginning of the commercial selling phase of a chip. The chip will be four corner tested and designed into new or improved versions of existing electronic products. Commercial developments that will make MRAM cost effective are only now beginning in earnest. Meanwhile, NVE has not shown a chip, chip design or chip component design to the industry, much less a sample.