



Data Storage  
Institute

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## PRESS RELEASE

### **LOCAL RESEARCHER NAMED WORLD'S TOP 100 YOUNG INNOVATORS BY *TECHNOLOGY REVIEW*, MIT'S MAGAZINE OF INNOVATION.**

*Researcher To Be Honored September 29 – 30 at  
Technology Review's Emerging Technologies Conference at MIT*

SINGAPORE– September 20, 2004 – A researcher from the Data Storage Institute (DSI) has been named amongst the World's top 100 innovators by *Technology Review*, MIT's Magazine of Innovation. Dr Zheng Yuankai, Research Scientist from the Data Storage Institute (DSI) is recognized for his work in revolutionizing the MRAM process.

The TR100, chosen by the editors of *Technology Review* and an elite panel of judges, consists of 100 individuals under age 35 whose innovative work in technology has a profound impact on today's world. This year's nominees are recognized for their contributions in transforming the nature of technology and business in industries such as biotechnology and medicine, computing, and nanotechnology.

Dr Zheng from DSI is recognized for his work in revolutionizing the MRAM process, making mass commercialization of this high-end product viable. He and his team specialize in spintronics, which combines the charge and spin of electron in electronic devices. His work has impact on two major spintronics applications. One is the magneto-resistive reader, which is used in the hard disk drive.. Another is the magneto-resistive random access memory (MRAM), which has high speed advantages of SRAM, high capacity of DRAM and non-volatility of flash memory. Current electronic devices use only one of the electron properties of charge, and neglect another quantum effect of spin.

The Magnetic Random Access Memory (MRAM) is a revolutionary memory technology with advantages of non-volatility, high speed, low power dissipation and high storage capacity. The MRAM has the potential to offer large storage capacity, non-volatility similar to that of a hard disk drive, high speed and a long life endurance cycle as that of a DRAM. This enables computers to execute the instructions stored in the MRAM directly. Computers would therefore be able to be turned on instantly without long boot up and can be shut down suddenly without loss of data. However, commercialization of MRAM is currently impeded by high cost and technology capacity.

Dr Zheng's invention on switch-free MRAM makes the MRAM process simpler and extends the capacity limitation caused by the CMOS technology. Zheng's other invention on multi-state per cell MRAM, with heat assistant recording, further increases the capacity of MRAM. Zheng also works on improving the power dissipation of MRAM (flux-

closed MRAM, spin-transfer switching MRAM), an area that will be of interest particularly for mobile applications and its related fields. All these inventions will help accelerate the commercialization of MRAM. With these technologies, a 32GB MRAM chip the size of a thumb could become a reality very soon.

The 2004 TR100's unparalleled panel of judges includes senior executives from the following organizations:

Boston University, Caltech, Cambridge University, CombinatoRx, Concept2Company, Cornell University, General Electric, Geekcorps, Georgia Tech, Harvard Medical School, Hewlett-Packard, IBM, Intellectual Ventures, Microsoft, MIT, Northwestern University, PureTech Ventures, Singapore Institute of Bioengineering and Nanotechnology, TIAX, Wharton, Xerox, and YankeeTek Ventures.

"In the five years since we began naming our annual selection of the world's top innovators under age 35, inclusion among the TR100 has become one of the most prestigious awards for young innovators around the world," said David Rotman, executive editor of Technology Review. "This year's winners are all pioneering fascinating innovations in the fields of biomedicine, computing and nanotechnology, and were chosen after a rigorous selection and judging process. The result is an elite group whose visions and inventions will shape the future of technology."

Dr Zheng will be honored on September 29 - 30 at the Technology Review's Emerging Technologies Conference at MIT. The event features keynotes, panels and breakout discussions on the transformative technological innovations that have the potential to fuel new economic growth and dramatically change the future. Keynote speakers include Vinod Khosla, founding CEO of Sun Microsystems and General Partner at Kleiner, Perkins, Caufield & Byers; Ray Kurzweil, renowned inventor, author and founder of Kurzweil Technologies; and Rick Wagoner, chairman of General Motors. More information on ETC2004 can be found at [www.tretc.com](http://www.tretc.com).

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### **About Technology Review, Inc.**

Technology Review, Inc., an MIT Enterprise, delivers essential information about emerging technologies and their impact on leaders. Since 1998, paid U.S. circulation for the company's magazine, Technology Review, has more than tripled, climbing from 92,000 to 315,000. With foreign editions recently launched in China, Italy, Germany and The Netherlands, the exposure of Technology Review magazine, combined with the company's signature events, newsletters, and online businesses, reaches over two million business leaders throughout the world each month.

### **About the Data Storage Institute (DSI)**

The Data Storage Institute (DSI) is a member of the Agency for Science, Technology and Research (A\*STAR). Established in 1992 as the Magnetics Technology Centre (MTC), it was renamed Data Storage Institute in 1996. The research institute's vision is to be a vital node in a global community of knowledge generation and innovation, nurturing research talents and capabilities for world-class R&D in next generation storage technologies. DSI is a member of the non-profit Information Storage Industry Consortium (INSIC) of USA. For more information, please visit: [www.dsi.a-star.edu.sg](http://www.dsi.a-star.edu.sg)

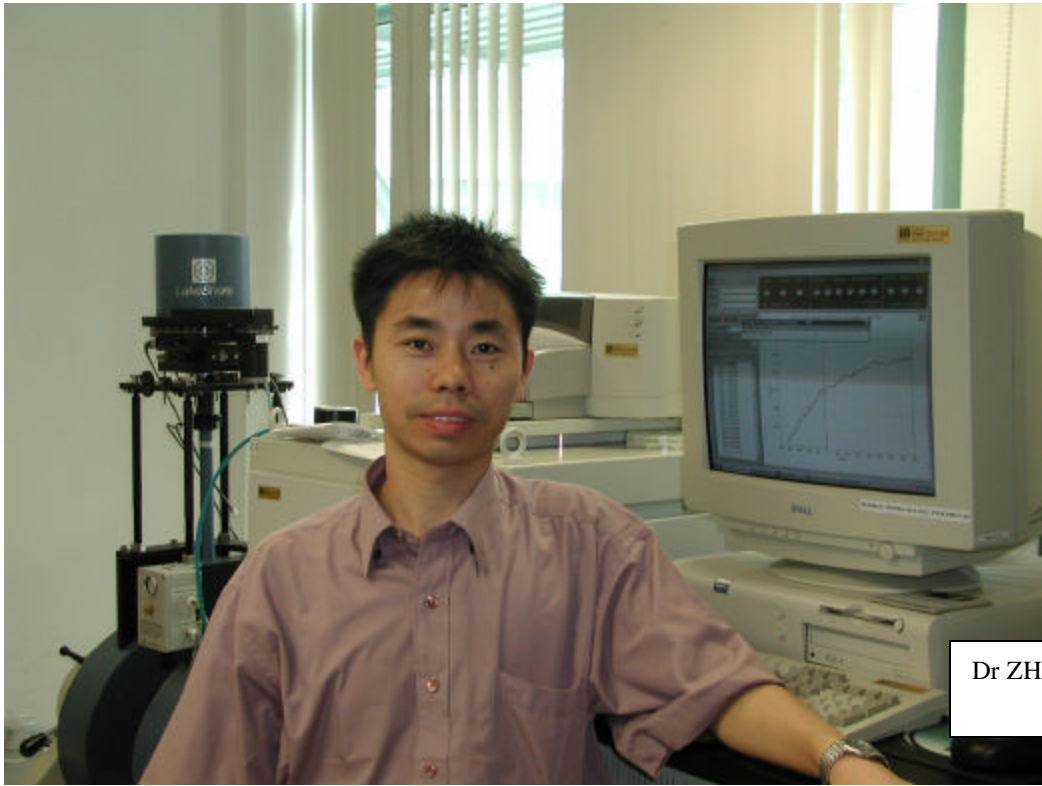
**Contact Details:**

For Data Storage Institute (DSI):

Chrystine Woon, Assistant Director, Administration, DSI, +65 6874 6505  
[Chrystine\\_WOON@dsi.a-star.edu.sg](mailto:Chrystine_WOON@dsi.a-star.edu.sg)

For TR100 and Technology Review:

Kristen Collins, KMC Partners, 617.833.5574, [kristen@kmcpartners.com](mailto:kristen@kmcpartners.com)



Dr ZHENG Yuankai in his lab



Dr ZHENG Yuankai