

DISTINGUISHED LECTURE

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Mark H. Kryder is University Professor of Electrical and Computer Engineering at Carnegie Mellon University and Technical Director of the Extremely High Density Recording Program of the Information Storage Industry Consortium. From 1998 to 2007, he was Senior Vice President, Research and from 2003 to 2007 he was Chief Technical Officer and Senior Vice President, Research at Seagate Technology. He has over 40 years of experience working in the field of magnetic memory and storage devices, having previously worked at Caltech, the University of Regensburg, IBM T. J. Watson Research Center and Carnegie Mellon University. Dr. Kryder received his BSEE degree from Stanford University in 1965 and his MSEE from the California Institute of Technology in 1966. He received his PhD in Electrical Engineering and Physics from Caltech in 1970. Dr. Kryder has over 350 publications and 23 patents in the field of magnetic memory and storage technology. He is a Fellow of the American Physical Society and of the IEEE. He has twice been selected as Distinguished Lecturer for the IEEE Magnetics Society and is a member of the National Academy of Engineering. In 1995 he received the IEEE Magnetics Society Achievement Award. In 2000 he was awarded the IEEE Reynold B. Johnson Information Storage Award and the IEEE Third Millennium Medal. In 2007 he was awarded the George E. Pake Prize by the American Institute of Physics for his leadership and research in high-density magnetic and magneto-optic data storage in industry as well as the Public Service Medal by the President of Singapore for his contributions to the development of the Data Storage Institute in Singapore.

The Future of Data Storage Technology

Magnetic hard disk drives have evolved from using fifty 24" platters to store 5 megabytes in 1956 to storing over one terabyte on four 3.5" disks today. This represents an area density increase of 10^8 from 2000 bits/in² to over 200 Gbit/in². This huge increase in area density has resulted in disk drives no longer only being used for computing, but increasingly in consumer applications, such as PVR's, GPS systems, MP3 players, games, and cameras. Moreover, recently, in order to overcome the loss of data from stolen laptops, full disk encryption has been introduced. In this talk future changes in technology that are expected to enable the industry to grow area density by yet another couple orders of magnitude while further enhancing performance will be discussed.

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