



**SAN FRANCISCO BAY AREA
NANOTECHNOLOGY COUNCIL**

January 2008 Seminar

Subject: Nanotechnology Trends in Nonvolatile Memory Devices

**Speaker: Gian-Luca Bona, Ph.D.
Department Group Manager of Science & Technology
IBM Almaden Research Center**

Date: Tuesday, January 15, 2008

Time: Registration & light lunch 11:30am. Presentation & Q/A 12:00 to 1pm

Location: National Semiconductor Bldg E-1 CMA Room. 2900 Semiconductor Drive, Santa Clara, CA
<http://www.google.com/search?hl=en&q=2900+Semiconductor+Drive.+santa+clara%2C+ca&btnG=Google+Search>

Cost: IEEE Members and Students \$5. Non-Members \$10

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Talk Abstract:

A large variety of materials for applications in non-volatile storage memories is currently being explored in academic research and industrial development laboratories. The technologies considered range from magnetic domain switching to resistance switching in phase change chalcogenide materials, solid electrolytes as well as in transition-metal oxides to novel probe storage based concepts. While it is relatively easy to identify materials that show bistable hysteretic behavior with easily distinguishable, stable on/off states it is quite challenging to obtain the necessary performance figures for a non-volatile memory device that can compete on the rapidly growing memory market. The requirements include fast switching preferably in the range of tens of nanoseconds at low power, requiring corresponding endurance figures substantially above today's flash- and hard-disk memories. All this has to come at costs comparable or lower than today's solutions which poses substantial challenges on technology scaling. Dr. Bona will discuss some of the most promising memory technology candidates with respect to the challenges in technology scaling and will also illustrate a few concepts for compact memory architecture.

Speaker Biography:

Dr. Gian-Luca Bona has been Department Group Manager of Science & Technology in the IBM Almaden Research Center in San Jose, CA, since 2004. He has a strong focus on expanding CMOS fabrication methods and on the development of nonvolatile memory devices. He joined the IBM Zurich Research Laboratory in 1987 where he conducted research in intense, high-speed semiconductor lasers. In 1994, he initiated work on integrated optical devices which led to a series of reconfigurable planar lightwave circuits and photonic bandgap concepts.

He studied physics at ETH Zurich, Switzerland, where he received a Ph.D. degree for his investigations on surface magnetic structures.