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NSLS's Elio Vescovo Talks On Thin Magnetic Films

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Over the past few years, scientists have been developing new materials for information storage applications, often in the form of thin-layered films.

The technology has evolved to the point where individual layers may be only a few nanometers - literally just tens of atoms thick. Such multi-layered structures not only promise to go beyond the limits of the memory density of current computers, but also display a variety of complex magnetic properties that scientists are only beginning to understand.

For example, scientists can assemble many layers of ultra-thin films, creating structures with electrical properties that can dramatically change depending on the values of an applied magnetic field, a phenomenon called giant magnetoresistance. Another puzzling property is the co-existence, in some ultra-thin magnetic films called half-metallics, of both metallic and insulating properties.

Elio Vescovo, physicist at the National Synchrotron Light Source (NSLS), has been investigating the properties of these intriguing ultra-thin magnetic films for the last five years. He uses a technique called photoemission, for which x-rays generated by the NSLS are projected toward a sample of thin films,

and electrons ejected from the sample are further studied to reveal its properties.

Vescovo is currently responsible for the spin-resolved photoemission program at NSLS beam line U5UA, where he has been working since 1995. Vescovo re-



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