

New memory storage devices on horizon with award-winning work

February 16 2006

A University of Houston student's award-winning research in solid state physics may one day provide faster, more efficient access to data, music and movies in such hand-held devices as MP3 players and cellular phones.

A third-year graduate student in physics at UH, Clarina dela Cruz recently captured first prize in the worldwide student competition of the 50th Magnetism and Magnetic Materials Conference. This event annually brings together scientists and engineers from the world over who are interested in recent developments in all branches of fundamental and applied magnetism. The student competition recognizes research excellence at the graduate level, with the winner receiving a \$1,000 fellowship and facing stiff competition from such institutions as the University of Nijmegen (Netherlands), Stanford University and Johns Hopkins University.

"I considered it a major achievement simply to be chosen as one of the five finalists," dela Cruz said. "I did not expect to win the competition because of the strength of my competitors who attend very prestigious universities."

Working under the supervision of Paul C.W. Chu, the TLL Temple Chair of Science, physics professor and founding director of the Texas Center for Superconductivity at the University of Houston (TcSUH), dela Cruz began her own research on the magneto-electric effects in multiferroic compounds after joining Chu's High-Pressure Low-

Temperature Group at TcSUH in January 2004. These new materials bear the potential for the future development of a new type of memory storage device and eventually may be found in any computer as a magneto-electric hard drive or for speeding up hand-held devices.

"Clarina is a highly motivated, bright student with an unusual experimental skill," Chu said. "This honor is a reflection of her dedication and hard work. In a very short period of time after joining our group, she has developed a high precision technique under the guidance of Professor Bernd Lorenz and obtained data that others cannot in the exciting emerging subfield of solid state physics – multiferroics. She can be very proud of her achievement."

As a student of Lorenz, the TcSUH research associate professor under whom dela Cruz is working, her understanding of solid state physics deepened significantly, and her interests quickly spread from superconductivity to magnetism and ferroelectricity – some of the most fundamental phenomena in condensed matter physics.

"The magneto-electric interaction present in these materials allows for a change of the electric polarization by an external magnetic field or the control of the magnetization using electric fields," said Lorenz. "This cross correlation of magnetic and electric properties provides the physical basis for future new developments in memory storage. In magneto-electric memory, media bytes will be written by magnetic write heads, as realized in any standard hard drive, but the stored information can be read electrically by detecting the subtle changes of the electric polarization induced in the magnetic write process."

Source: University of Houston

Citation: New memory storage devices on horizon with award-winning work (2006, February 16)
retrieved 20 April 2024 from
<https://phys.org/news/2006-02-memory-storage-devices-horizon-award-winning.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.