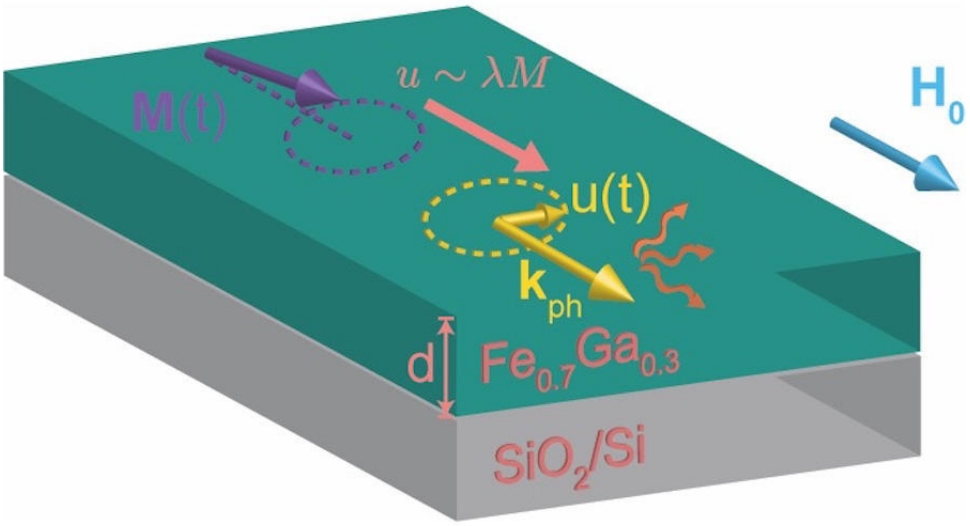
JUNE 2021

CONNECTIONS

LATEST NEWS AND UPDATES FROM SEMICONDUCTOR RESEARCH CORPORATION



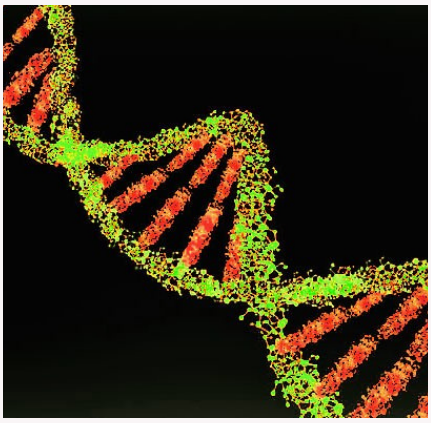
nCore Research Uncovers Cause of Spintronic Energy Loss

Research supported by the University of Minnesota's Spintronic Materials for Advanced Information Technologies (SMART) center, the nCORE program funded by SRC and the National Institute of Standards and Technology (NIST), uncovered a property of magnetic materials that may allow engineers to develop more efficient spintronic devices in the future. Damping is a key cause of energy loss, long attributed to the interaction between the spin of the electron and its motion. However, researchers proved there's another factor: magnetoelastic coupling—the interaction between electron spin, or magnetism, and sound particles. SRC researcher Bill Peria, a Ph.D. student in the School of Physics and Astronomy, noted: "We found another mechanism by which the magnetism can be damped that is not usually considered." Learn more about the discovery in this UMN feature.

READ ON FOR MORE NEWS AND UPDATES!

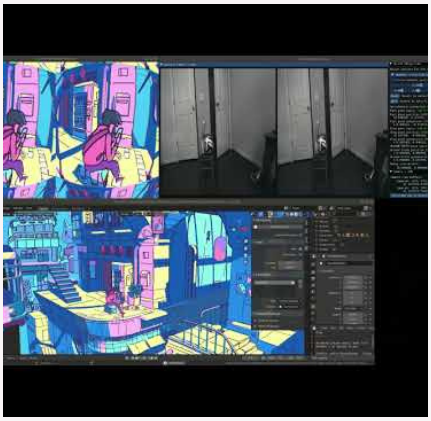
Semiconductor Research Corporation

More Research Highlights



Closing In on an Era of DNA Data Storage

Could DNA hold the key to our ever-growing challenges for memory and storage? The recently formed DNA storage alliance thinks so. SRC has been a leading voice in this arena for a number of years. In 2018, Chief Scientist Victor Zhirnov led the development of a Semiconductor Synthetic Biology research roadmap to accelerate the capabilities and applications of future-generation integrated circuits. This article on Medium makes the case that we're closing in on an era of DNA data storage and quotes the SRC roadmap in the assessment.



ARM Highlights ADA Research in Annual Report on Architectural Innovation

ARM's Research Impact Report 2021 highlighted the game-changing open-source extended reality (XR) testbed ILLIXR. Developed by researchers at the JUMP-sponsored Applications Driving Architectures (ADA) Center to speed virtual and augmented reality innovation, ILLIXR is the first-of-its-kind testbed designed to to accelerate progress in XR systems research, development, and benchmarking.

Awards and Recognition

Margaret Martonosi Receives Prestigious Eckert-Mauchly Award

Margaret Martonosi is the recipient of the 2021 ACM/IEEE CS Eckert-Mauchly Award! She is the Hugh Trumbull Adams '35 Professor of Computer Science at Princeton and serves as head of the Directorate for Computer and Information Science and Engineering at NSF. Sending our warmest congratulations on this achievement.

ADA Principal Investigators Receive Honors

The Applications Driving Architectures (ADA) Center, supported through JUMP, is developing a transformative "plug-and-play" ecosystem to encourage a flood of fresh ideas in computing frontiers such as autonomous control, robotics and machine learning. Researchers from nine universities work together to create a modular approach to system hardware and software design that may one day streamline the manufacturing of next-generation computing systems.. Two ADA Principal Investigators were recently honored with awards. University of Michigan **Prof. Thomas F. Wenisch** (top) received the ACM-SIGARCH Maurice Wilkes Award for his contributions to memory persistency and energy-efficient systems. Cornell University **Prof. Adrian Sampson** (right) received the IEEE TCCA Young Computer Architect Award, recognizing outstanding and innovative research contributions to Computer Architecture. Many congratulations!

Khan Earns DARPA Young Faculty Award

Congratulations to Asif Khan for receiving a DARPA Young Faculty Award at Georgia Tech, Khan's research focuses on using ferroelectrics and quantum materials to overcome fundamental limits in computation and to address the most pressing challenges in the semiconductor industry. Recently, he presented a course on "Quantum Computing Devices and Hardware" at the 79th Device Research Conference (DRC).

Szefer Wins 2021 Ackerman Award

Yale's Jakub Szefer received the 2021 Ackerman Award for Teaching and Mentoring. A longtime member of the SRC research community, Szefer is the recipient of the NSF Faculty Early Career Development Award and is the recent author of the book, *Principles of Secure Processor Architecture Design*. Many congratulations, Jakub!

Awards and Recognition

Butler Deep Dive at FIGI

Cybersecurity expert Dr. Kevin Butler of University of Florida gave a talk at the Financial Inclusion Global Initiative Symposium Deep Dive on Security audit for Android digital financial services (DFS) applications. His research focuses on security tools for software and is useful to improve the security of smartphones and promote best practices for software developers.

In the Media

Podcast Takes You Inside DARPA

Voices from DARPA offers a revealing and informative window into the Agency's programs. Episode 45: Ushering Microelectronics into Its Next Era explores how the Electronics Resurgence Initiative (ERI) is taking the industry to new heights. The episode features DARPA's Mark Rosker, SIA's John Neuffer and Lockheed Martin's Jim Libous,

Top 5 SRC Publications Viewed Across All Programs

Be sure to take a look at the papers that received the most views on the SRC website over the last six weeks. Members of the associated programs have early access to the pre-publications.

- Monolithically Integrated CPU—Main Memory Chips—SRC Pub ID P103711
- Ferroelectric Properties of Aluminum Scandium Nitride Thin Films—SRC Pub ID P103784
- Electromigration and the Electron Wind Force in Aluminum, Cobalt, and GST—Pub ID P103719
- Reliability Study of E-mode GaN HEMT Devices by AC TDDB and High-Resolution TEM—SRC Pub ID P103880
- Report on Thin Film Back-end Transistors with Field Enhanced ON Current Improvement—SRC Pub ID P103449