

**Semiconductor research provides technology leadership and outstanding value to taxpayers. Help grow SRC by learning about SIA's initiative [here](#) »**



Image Credit: Getty Images

### **ASIC Clouds: specializing the datacenter for plant-scale applications**

A team led by JUMP ADA PI, Prof. Michael Taylor of U/Washington, had their research on ASIC Clouds [featured as a Communications of the ACM Research Highlight](#). Only 2 computer architecture papers are selected annually from across the globe, so it is yet another acknowledgement of the high quality of Prof. Taylor's SRC research. His original 2016 paper, out of SRC's C-FAR Center, predicted the Google TPU and the emergence of video transcoding ASIC clouds. Prof. Taylor's seven talented SRC students can be found [here](#) and would great intern / full time hire candidates for members.

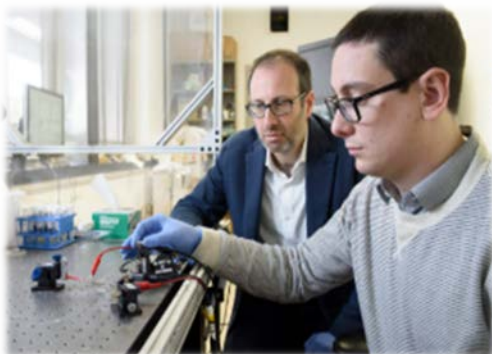


Image credit: L.A. Cicero

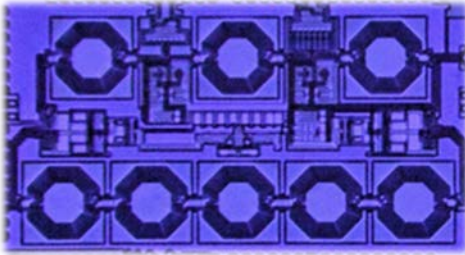
### **nCORE researchers develop artificial synapse that works with living cells**

Stanford researchers Alberto Salleo and Armantas Melianas and PhD student Scott Keene have created a device that can integrate and interact with neuron-like cells. This could be an early step toward an artificial synapse for use in brain-computer interfaces. In a paper published in *Nature Materials*, they have tested the first biohybrid version of their artificial synapse and demonstrated that it can communicate with living cells. [Read more here](#) and [here](#) »

## 2020 DARPA ERI Summit and MTO Symposium agenda published



DARPA announced the plans for their third annual event. ERI brings together the electronics ecosystem to foster collaboration and share technical progress on DARPA's 5 yr. \$1.5B dollar investment to advance the U.S. semiconductor industry. This year's event will be entirely virtual, but will feature presentations on MTO's advanced research initiatives, workshops, poster and demo sessions, as well as compelling keynotes from industry leaders. There is a special JUMP workshop session on Thursday, Aug 20<sup>th</sup> from 2:15 – 5:45 PM EDT. [Read more](#) »



### “One-way” electronic devices enter the mainstream

A ComSenTer and DARPA SPAR team led by Columbia Professor Harish Krishnaswamy is the first to build a high-performance non-reciprocal device on a compact chip, noting a 25x performance improvement over their prior work. High-performance non-reciprocal devices on a compact chip may pave the way for applications from two-way wireless to quantum computing. [Read more](#) »

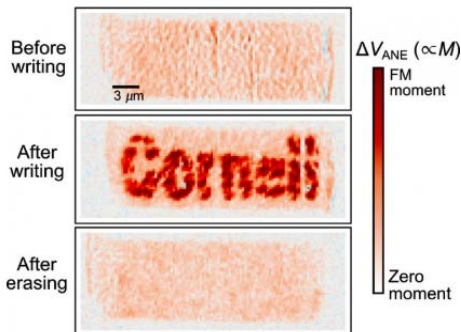


Image credit: Isaiah Gray

### Rewritable magnetic patterning: think tiny Etch A Sketch

Cornell researchers have demonstrated a technique for writing, erasing and rewriting microscopic magnetic patterns onto a material – a concept tested by writing and erasing “Cornell” eight times onto the sample. This achievement will aid in the research of magnetism for ultrafast computer memory and other applications. [Read more](#) »



### SRC PI recipient of 2020 SIGARCH Berenbaum Award

Congratulations to Duke Professor Alvin Lebeck, recipient of the 2020 Alan D. Berenbaum Distinguished Service Award for creating, curating, and architecting the *Computer Architecture Today* blog which has transformed how the computer architecture community connects and communicates. This award is given annually to recognize individuals who have contributed important service to the computer architecture community. [Read more](#) »



### “Smile, you’re on Camaroptera” thanks to the CONIX Center

Prof. Brandon Lucia and team created *Camaroptera*, a battery-less remote image sensor powered completely by solar panels and capable of wirelessly transmitting images over kilometers, even in a crowded city environment. “The magic of Camaroptera is that it can operate independently and over large geographic areas. The device can collect images remotely, and then process them locally,” Lucia said. Graduate student, [Harsh Desai](#), is available and interested in an industrial internship. [Read more](#) »

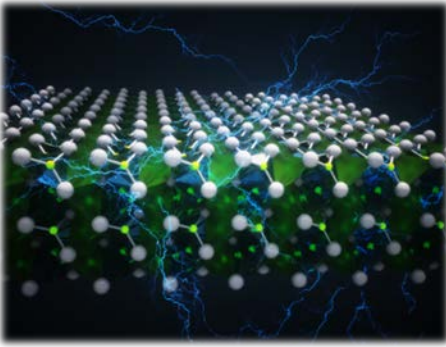


Image Credit: Ella Maru Studio

## Unexpected rise in ferroelectricity as material thins

A DARPA [T-MUSIC](#) team that was a direct “graduation outcome” from ASCENT Center research in JUMP showed that Hafnium Oxide surprisingly exhibits enhanced ferroelectricity (reversible electric polarization) as it gets thinner. The work shifts the focus of ferroelectric studies from more complex, problematic compounds, to a simpler class of materials and may open the door to novel ultrasmall, energy-efficient electronics. [Read more](#) »

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