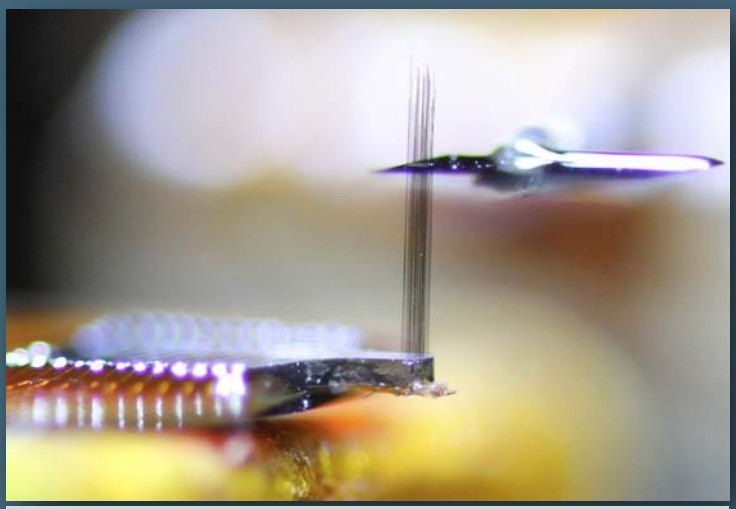

Thirty-two 5 µm carbon fibers are threaded through 20 µm holes at 38 µm pitch in the 280 µm-thick silicon substrate (lower) and aligned using a 15 µm-thick array of silicon funnels (upper).

The Berkeley Sensor & Actuator Center
presents

The BSAC Researcher Seminar Series

featuring

Travis Massey

of the

Michel Maharbiz Research Group

A High-Density Carbon Fiber Neural Recording Array Technology

May 8
2018

12:15 | 490 Cory Hall

Login to the BSAC website to view the event live:
http://www-bsac.eecs.berkeley.edu/rsscast/

The May BSAC Research Seminar will feature Travis Massey of BSAC Co-Director Prof. Michel Maharbiz's group.

Cortical interfaces will play a key role in the budding industry of brain-machine interfaces for restorative clinical applications, as well as the developing field of "electroceuticals" for treatment and management of diseases and neurological disorders. Increasingly advanced tools are desired for detecting electrical activity in the brain, with many applications demanding ever-greater channel count and finer sampling pitch maximize neural information gathered while yet minimizing the adverse biological response the implanted device. Travis will present a 32-channel carbon fiber microwire neural recording array with electrode pitch four times finer than the state of the art and the finest microwire electrodes demonstrated to date. The transition to an out-of-plane architectural paradigm enables these advances, with 5 µm diameter carbon fiber monofilament recording electrodes threaded through a two-dimensional array of holes in a microfabricated silicon substrate.

This presentation will focus on the microfabrication and assembly of the 32-channel recording array, including mechatronic design of an automated system to aid assembly and pave the way toward scalability to thousands of recording sites along with techniques to diagnose and address specific microassembly challenges potentially of broader interest to BSAC members.

Travis joined BSAC as an undergraduate in August of 2007. That's 22 IABs! This May he will graduate with his PhD in Electrical Engineering and Computer Sciences, having been co-advised by Michel Maharbiz and Kris Pister. His work has spanned all manner of bioelectronic interfaces and the miniaturization thereof, with recent efforts targeted at the development of a high-density neural recording interface. Other projects have included actuated neural recording arrays for minimizing the adverse biological response, as well as investigating methods to influence the trajectories of insects via optical, acoustic, and electrical stimulation modalities. Travis also received his MS and BS at UC Berkeley, working with Kris Pister on a lightweight, protocol-independent compression algorithm for wireless sensor network traffic.

THE BSAC RESEARCHER SEMINAR SERIES IS OPEN TO BSAC MEMBERS, FACULTY, AND RESEARCHERS ONLY.