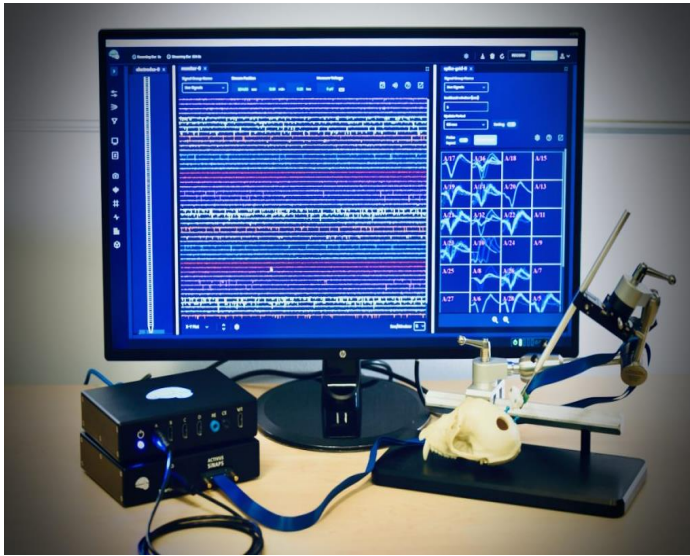


Introducing NeuroNexus SiNAPS:

Revolutionary SiNAPS probe technology features integrated active CMOS circuitry for unmatched performance. Its large-span, high-density layouts enable simultaneous sampling of entire target regions.

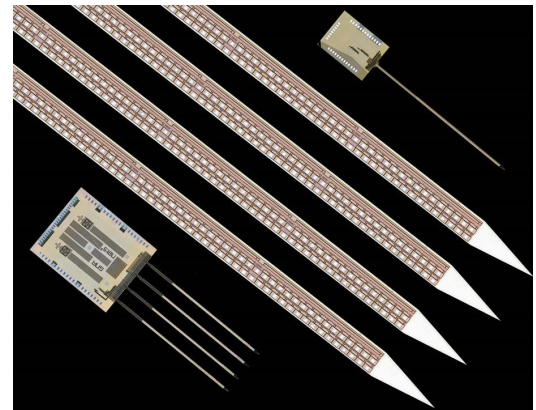


Specification

RMS Noise	6.5 μ VRMS (300-7500 Hz)
In-pixel Amplifier	46 dB (DC-4 kHz)
Power Consumption	<6 μ W/electrode-pixel
Sampling Frequency	20 k sample/s
Electrode Size	14 x 14 μ m ²
Electrode Pitch	29 μ m
Electrode Site Material	Pt
Shank Spacing (center-to-center)	560 \pm 2 μ m (4-shank 1024-ch) 300 \pm 2 μ m (8-shank 1024-ch)
Shank Thickness	50 \pm 5 μ m

Advantages

- **Simultaneous Recording From All Sites**
- **High Channel Count:**
 - Available in 256 or 1024 channel designs on 1, 4, or 8 shanks.
- **Enhanced Signal Quality:**
 - Active Pixel Sensor (APS) technology amplifies and filters signals at each electrode for maximum SNR.
- **Optogenetic Fiber Compatible**
- **Hybrid Packages Available**
- **Integration:**
 - Fully integrated with NeuroNexus high performance data acquisition system



Probe Package Options:

- **Regular packages:**
 - SiNAPS_1S_256-AVS256
 - SiNAPS_4S_1024-AVS1024
 - SiNAPS_8S_1024-AVS1024
- **Opto packages:**
 - SiNAPS_1S_256-OAVS256
 - SiNAPS_4S_1024-OAVS1024
 - SiNAPS_8S_1024-OAVS1024



NeuroNexus

SiNAPS Probes

SiNAPS_1S_256

Probe Specifications:

- Electrode Span~ 3.8 mm
- Shank Length~ 5.6 mm
- Shank Width~ 80 μ m

SiNAPS_4S_1024

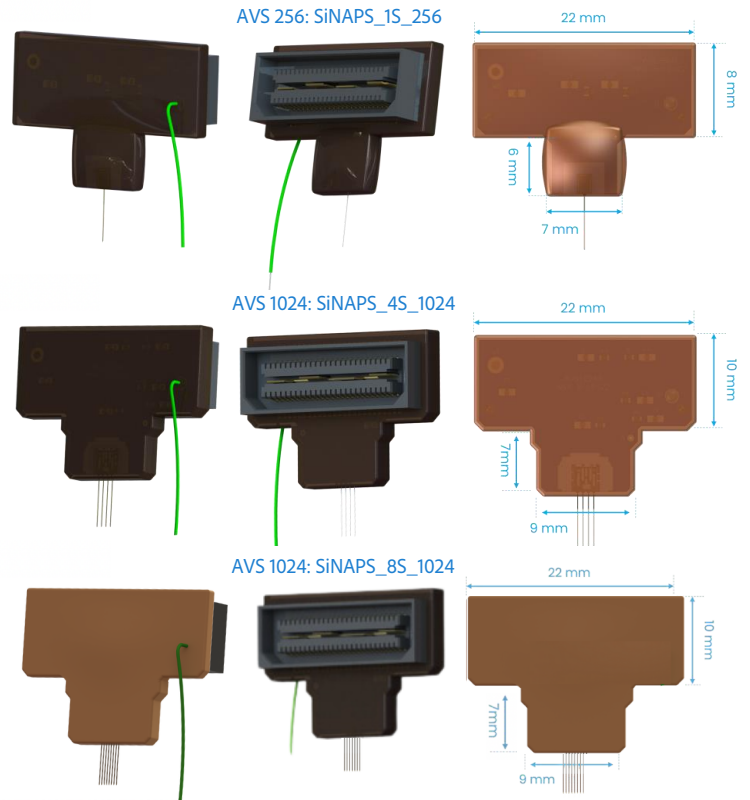
Probe Specifications:

- Electrode Span~ 3.8 mm
- Shank Length~ 5.6 mm
- Shank Width~ 80 μ m
- Shank Spacing~ 560 μ m

SiNAPS_8S_1024

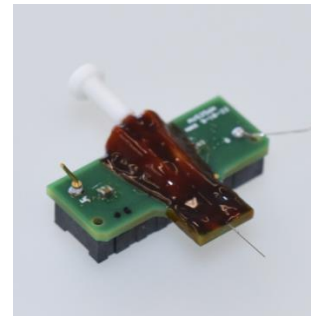
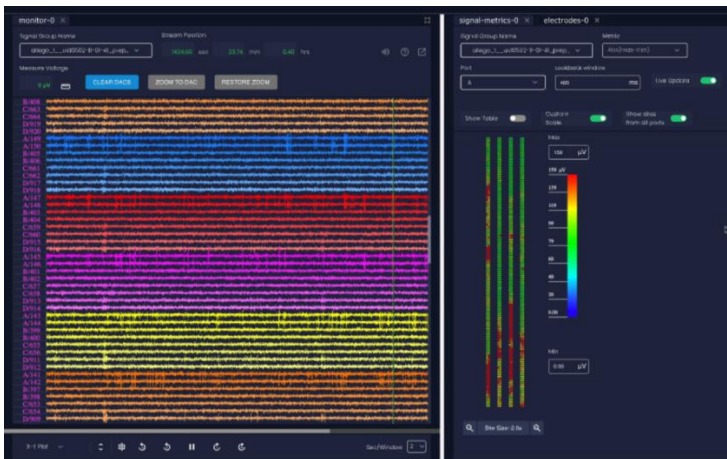
Probe Specifications:

- Electrode Span~ 1.9 mm
- Shank Length~ 5.6 mm \pm 60 μ m
- Shank Width~ 88 μ m
- Shank Spacing~ 300 μ m



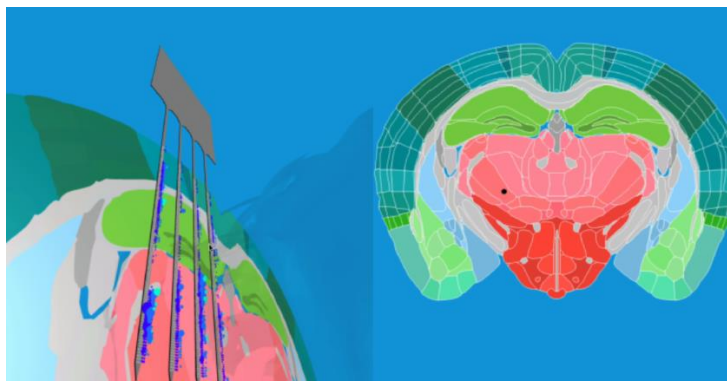
**optogenetic packages are the same dimensions (with 1.25 mm ferrule)*

Get The Most Out Of Your Experiment

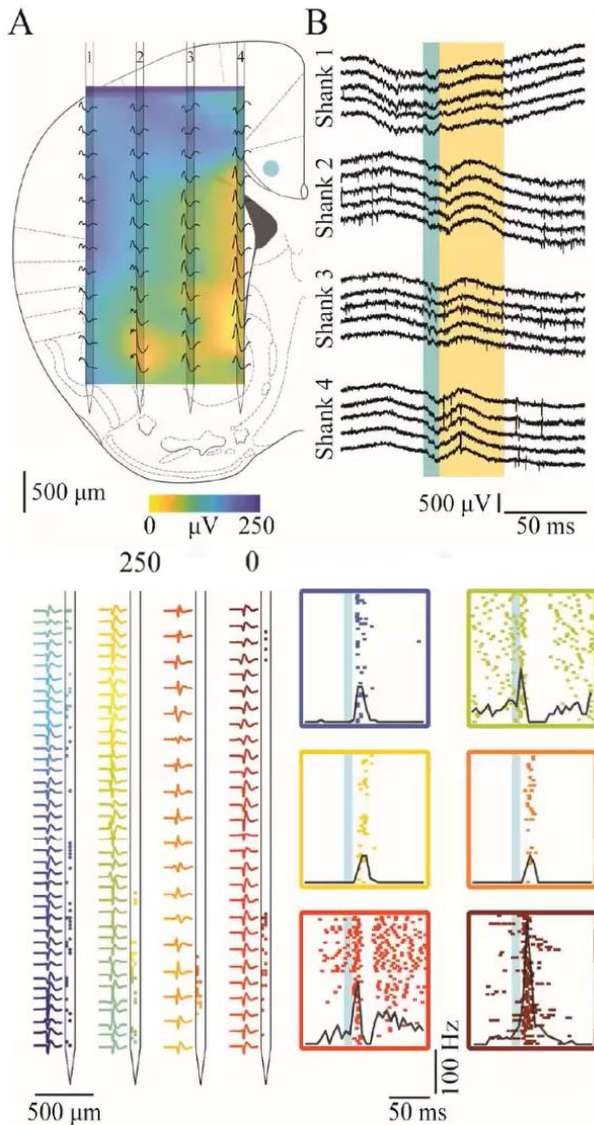


System Requirements:

- SmartBox Pro™
- SiNAPS Interface Box
- Radiens™ Analytics Software Suite
- Laptop or Desktop Computer



SiNAPS: Mapping Brain Activity Across Wide Regions



SiNAPS opto packages offer flexibility in fiber placement, with options for single fiber on 256-ch or up to 4 fibers on 1024-ch designs, allowing placement between shanks or preferred locations.

The color map shows *in vivo* recording of optogenetic responses of LFPs. LFP is higher close to the stimulation point and degrades when gets further away.

Experimental setup:

- Virally mediated optogenetics mouse model
- 1024-ch SiNAPS probe
- Light <1 mm distance from the closest recording site.
- As expected, the right units are **more responsive** with respect to the **closer distance** that they have to the optical fiber
- **Representation of Wide-Field Neural Networks:** Neurons far from the light stimulus also showed responses.
- Advantage of **tracking single cell** across the whole array in chronic application

<https://ieeexplore.ieee.org/abstract/document/9645041>

