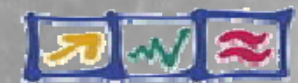


NeuroProbes

Herc Neves, Coordinator
Principal Scientist, Biomedical Microsystems
imec Belgium

Professor of Physics
Uppsala University, Sweden

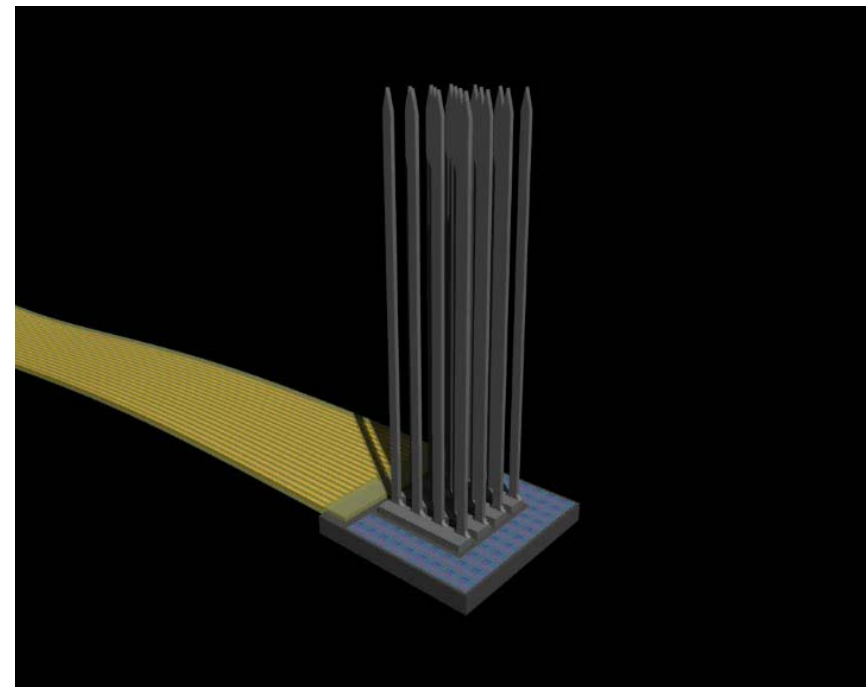


Introduction



NeuroProbes aims to develop a new class of probe arrays for cerebral applications. These probes distinguish themselves by the following features:

- Modularity
- Slim integration backbone
- Multiple functionality
- Chronic use
- Electronic depth control



Key differentiators

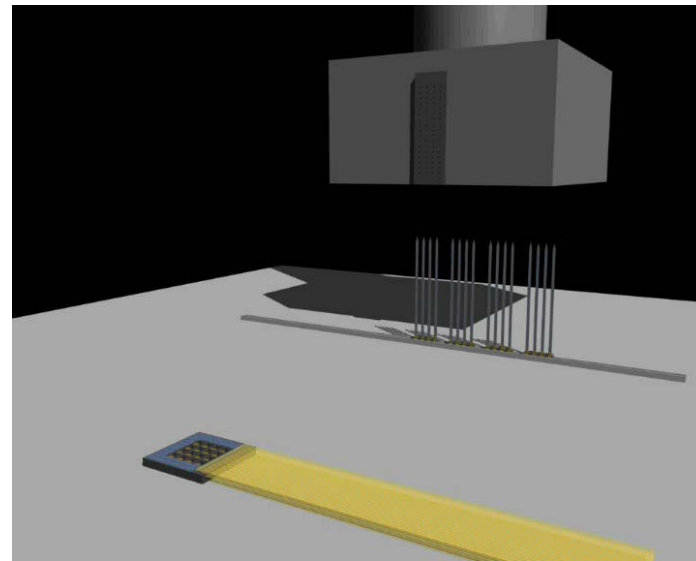
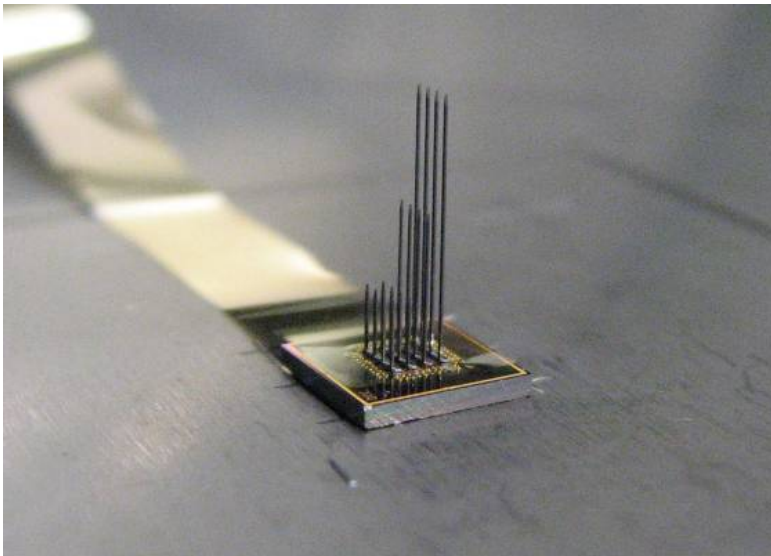


- *Modular approach.* Probes are assembled in a Lego® fashion that permits to combine probes with different functionalities, shapes and sizes on a common backbone.
- *Chronic use.* A combination of diverse strategies (not limited to biocompatible coatings) for the management of foreign body reaction is being investigated in NeuroProbes.
- *Electronic depth control.* Instead of relying on trial and error, our probes are designed to allow the individual control of electrode position with respect to single neurons.

Major achievements



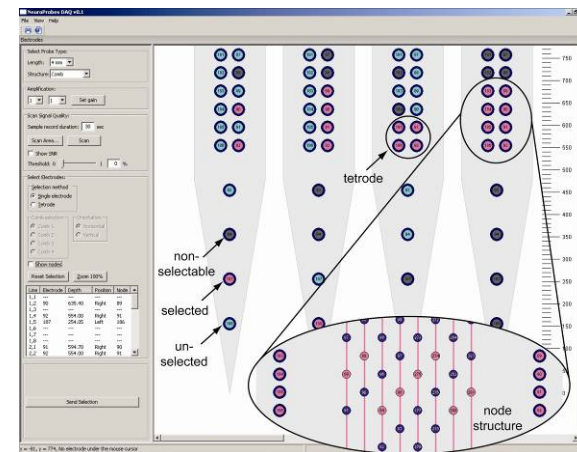
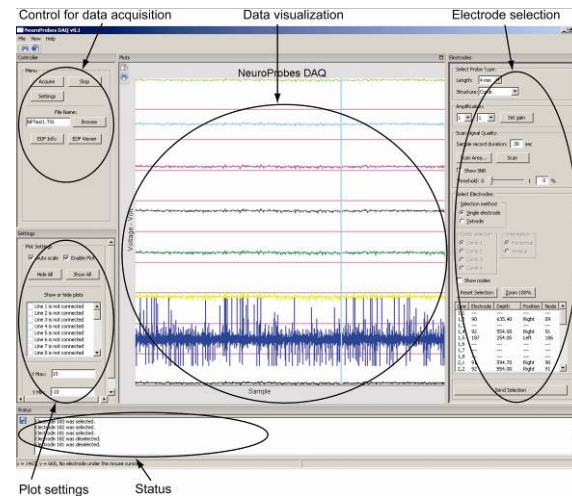
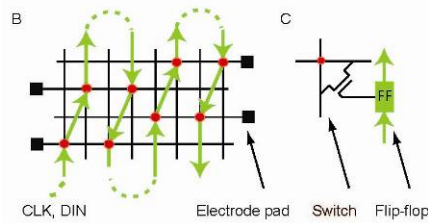
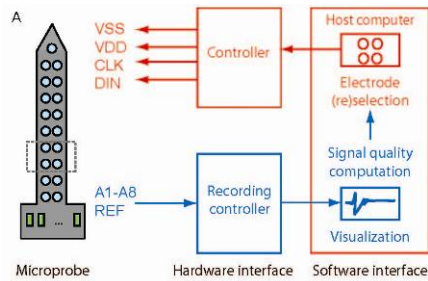
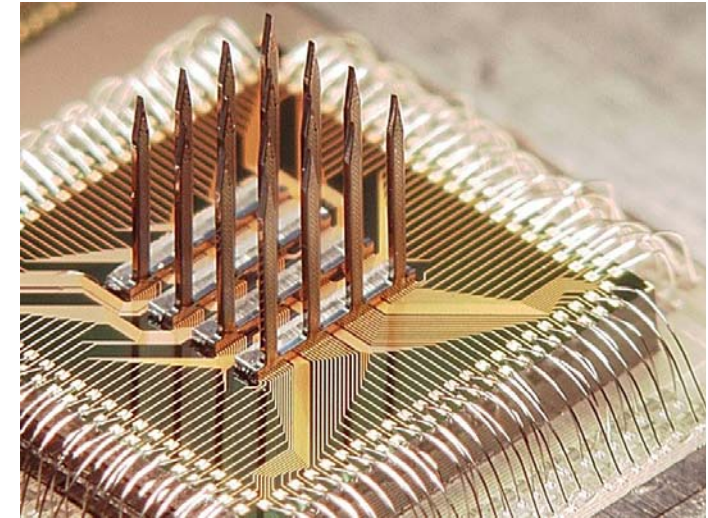
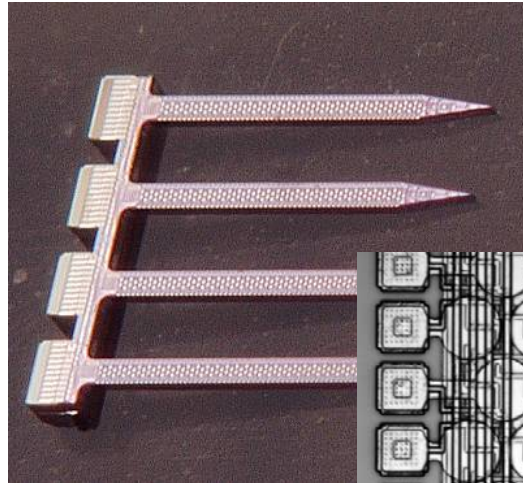
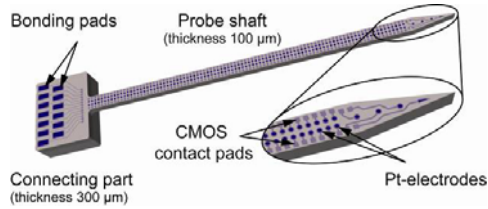
- Modular 3D probe assembly



Major achievements – cont'd



■ Electronic depth control & user interface software



Status at the end of Year 4



- All main objectives reached, extra deliverables generated
- Focus on validation (also in extension phase)
- Reduced effort in technology development: support & refinement (cost reduction, yield improvement)
- Final steps for the generation of a startup company
- Securing additional IP
- Large number of publications (including major journals such as Nature and Science)
- Strong presence at main conferences
- No follow-up project (fragmentation of results)



- Neuroengineering in Europe (including academic research, collaborative projects, companies, etc) has a strong potential for worldwide leadership.
 - If it remains fragmented, neck-to-neck competition with US and elsewhere is likely to persist
 - If a cohesive initiative is taken (which at the moment is easier in Europe than elsewhere) a leading position is almost guaranteed

Acknowledgments



The European Commission



Information Society
Technologies



The NeuroProbes team

