NeuroConnex

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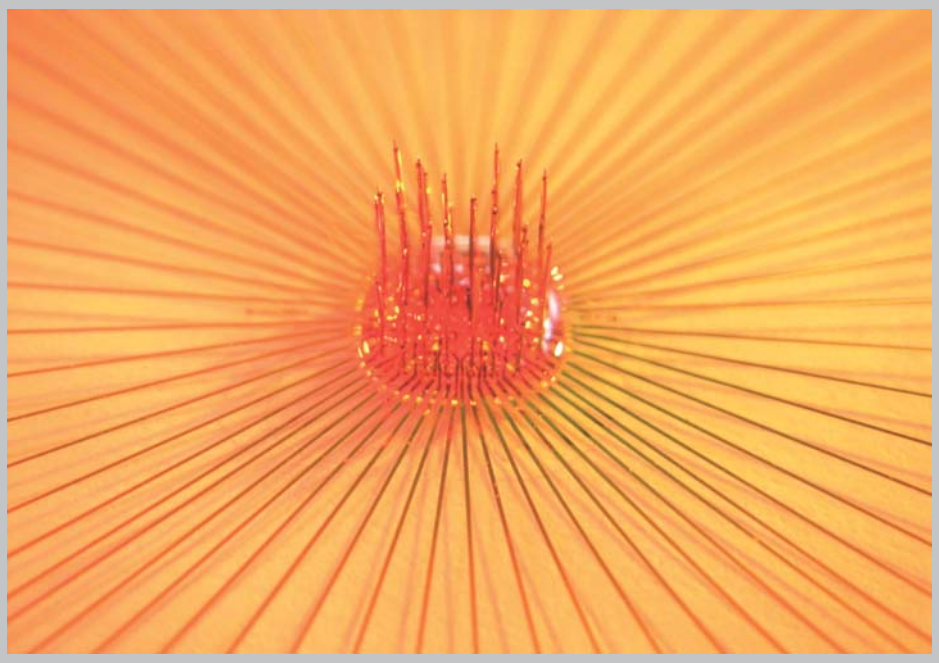

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3D Electrode Array

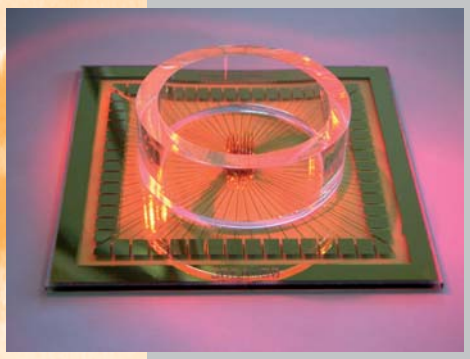
Stimulation and Recording in 3D

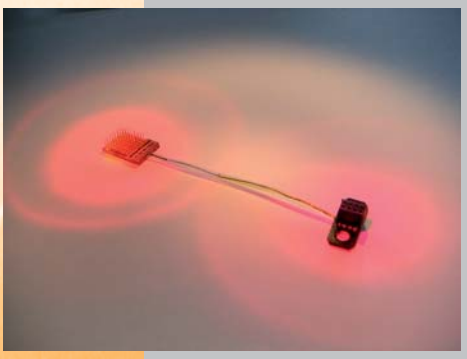
Multi channel recording methods are well known in modern neurophysiology — the next step to explore the 3D structure of brain using a hundreds of recording and stimulation electrodes at once.

First bidirectional neural interface with up to 256 electrodes is finally available!

Intra-Cortical Interface (ICI) has been specifically designed to explore deep structures of the brain in-vivo or in-vitro and offers a bidirectional interface with neural tissue. You may record an activity of group of cells and electrically stimulate them at the same time. The electrodes of ICI may have the same length or form any custom designed three dimensional surface and record signal from different neural layers. Using our 3D reconstruction machinery of activity fields you can see high-speed changes in activity of different layers and explore it's internal organisation. Also neuroprosthetic applications benefit from such special features of ICI as:

- **low impedances of electrodes,**
- **integrated stimulation/recording electronic,**
- **chronically implantable assembly,**
- **battery powered backpack for long-term animal trials.**





3D Multi Electrode Arrays

Neural recording from thin slices is already a well known method and will be widely used in neurophysiology or pharmacology. New class of devices - 3D Electrode arrays (3DMEA) - gives a new insight into deep structures of whole organs like heart or brain. Ready to use in-vitro setup based on 3DMEA is the best solution for high-throughput screening applications. Various mechanical designs of 3DMEA gives you a full compatibility with broadly available recording systems and mechanical assemblies. Compact on-chip recording and stimulation system with simple six wire interface is also available and is best suited for low noise extracellular recording.

Intra-Cortical Interface

Very often long-term animal trials require implantable systems able to stimulate neural tissue and to register its responses. ICI is optimally suited for multi channel investigation of cortical activities, intra-nerve signalling and vegetative nervous system. Among several standard designs, including up to 256 electrodes, special custom assemblies may be manufactured in a very short time. The number of channels, electrode position and its length may be specified for your particular application. The control soft ware allows you to select the stimulation and recording parameters, to control the internal settings of the electronic interface and includes several special modules for visual and hearing prosthetic applications. At the same time an Open Software Interface gives you a unique opportunity to implement and test your own algorithms and application.

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Technical characteristics

Number of channels	16, 64, 128, 256
Stimulation modes	Uni/bipolar
Stimulation amplitude, µA	1-2000
Amplitude digitalisation, bit	12
Maximal sampling frequency, MHz	1
Maximal output voltage range, V	6
Maximal leakage current, nA	45
Available electrode materials	Pt, Ir, IrOx, Au
Electrode diameter, µm	100
Minimal electrode pitch, µm	250
Programmable gain amplifier, dB	0—120
Bandwidth, Hz	4.5—3500
Internal amplifier noise, µV RMS	4
Supply voltage, V	5
Power consumption, mW	0.6

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