

Grid electrodes

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Grid electrodes have been established in clinical applications to record mass signals and local field potentials of the brain surface, either epi- or subdurally during presurgical epilepsy monitoring. Customized designs include small regions of small sized electrodes with high spatial resolution to acquire local signals and higher frequency components. In non-human neuroscientific applications, micromachining technologies have shown potential to improve signal quality and the deliver the opportunity to record not only local field potentials but also multi- and single unit activity by using surface arrays. This presentation will give an overview of approaches and developments of grid electrodes to record electrical signals and stimulate nerve ensembles electrically. Integration of optical tools to enhance device functionality will be discussed in the context of optogenetics and near infrared spectroscopy. The talk end with a discussion of some translational research aspects , for example time lines to bridge the “valley of death” between the proof-of-concept and the break-even of approved active implantable medical devices.