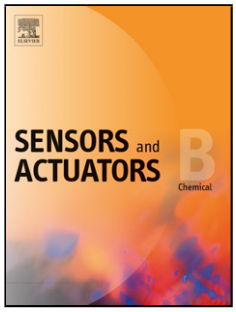

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Functional brain mapping using optical imaging of intrinsic signals and simultaneous high-resolution cortical electrophysiology with a flexible, transparent microelectrode array

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Abstract

Intrinsic optical signal imaging (IOSI) records tiny changes in optical reflection of the exposed cortical surface due to neuronal activation related local hemodynamic changes. Cortical electrophysiology performed in the very same visual cortical area may provide additional insight into the connectivity between functional domains. Our aim is to investigate the simultaneous use of IOSI and µECoG (micro-electrocorticography) techniques by introducing a transparent polymer based subdural microelectrode array into the optical recording chamber used for *in vivo* functional mapping experiments in anaesthetized cats. To demonstrate the feasibility of the combined optical-electrical recording, we have run several stimulus protocols and measured the evoked optical and electrical