**Intracellular potential measurements of adherently growing cells using micro-needle arrays.**


**Abstract:** We present a new sensor chip system for intracellular potential measurements of adherently growing cells using micro-structured needle electrode (MNE) arrays. Existing methods for intracellular investigations are time-consuming, tedious or limited to the analysis of suspended cells. However, most biological cells grow adherently. To overcome these methodological limitations a novel technique, local micro-invasive needle electroporation (LOMINE) in MNE arrays, has been developed. LOMINE opens the cell membrane for introducing a MNE into the cytoplasm. This paper describes the fabrication process of the MNE-array chips and first cell electroporation experiments.