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Multifunctional Probe for Chemical Stimulation and Neural Signal Recording

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This paper presents a single-unit neural probe which functions both as a neural signal recorder and a chemical stimulator. The single-unit neural probe contains in-plane shanks with buried microchannels and low-impedance microelectrodes that are fabricated using the roughened polysilicon process. The fabricated neural probe has three 3-mm-long shanks with 10-μm-diameter microchannels, and six 30 μm × 30 μm gold microelectrodes per shank. The impedance magnitude and phase shift of the microelectrodes are 317 kΩ / 900 μm^2 and –56.2° at 1 kHz, respectively.

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