

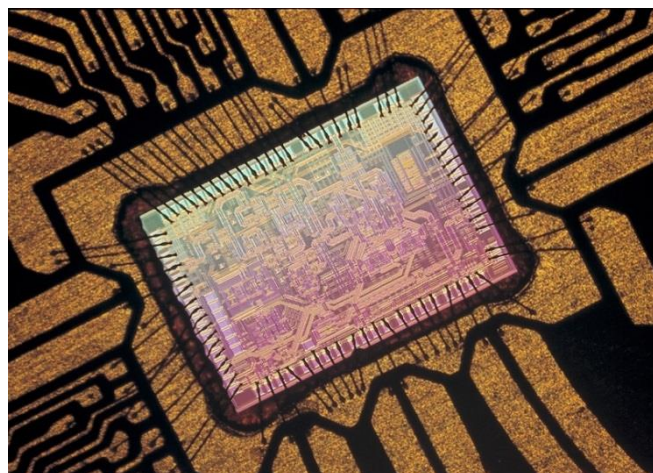
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Utilization of Electrochemistry for detection of bacteria on a 3D printed flow chip

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Abstrakt

The electrochemical method of differential pulse voltammetry was used for detection of electrochemically active 1-naphthol as the result of enzymatic cleaving of electrochemically inactive 1-naphthyl phosphate. 3D printed flow chip performed detection of *Staphylococcus aureus* based on alkaline phosphatase activity. Bacteria from the solution were captured by application of modified magnetic particles in the chip. The detection limit of electrochemical



determination of 1-naphthol was 20 nM. For electrochemical determination of 1-naphthol by DPV the optimal conditions (measurement temperature, flow rate or accumulation time) were measured. The calibration curve of 1-naphthol with regression coefficient $R^2=0.999$ was measured and the limit of detection and quantification was calculated. A flow chip was used for electrochemical detection of bacteria by electrochemically active 1-naphthol. The chip could be the part of robotic system and it can serve for remote control of

bacteria presence.

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