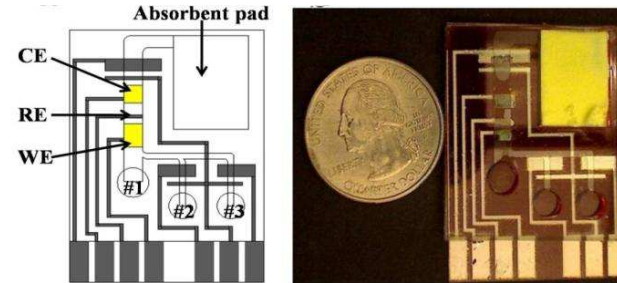


## Low-cost Microfluidic Detection of Pathogens

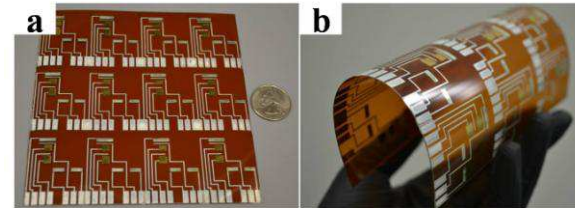
The Nugen Research Group has been developing rapid methods for the detection of pathogenic bacteria.

The goal of the project is to produce a low-cost device which is able to perform complex reactions. The capillary-flow microfluidic device incorporated electrowetting valves and electrochemical detection. This allowed automated and timed reagent delivery during the reaction.

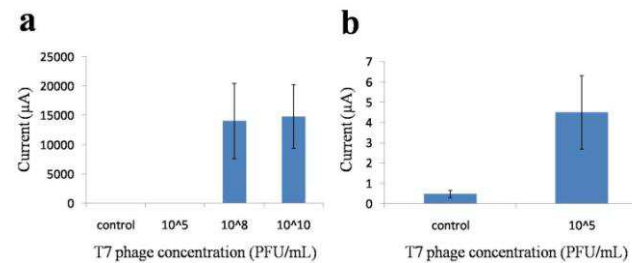
The final device was able to electrochemically detect  $1 \times 10^5$  bacteriophage which resulted from an initial  $1 \times 10^3$  *E. coli*.



Microfluidic device with electrowetting valves and electrochemical detection



Electrodes were inkjet-printed on flexible substrates using conductive inks



The device was able to detect the virus electrochemically using automated capillary flow

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