

# Electrochemical Biosensor Array for Liver Diagnosis using Silanization Technique on Nanoporous Silicon Electrode

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## The Problem

There are a number of diseases, such as the three strains of hepatitis (A, B, and C), as well as cirrhosis, that affect the liver. All of these diseases require complicated lab tests to be performed in order to have them diagnosed and monitored, and often times hospitals do not have the equipment necessary to perform such tests on site. This means that an offsite location is needed just to get the tests run, and the delay in between sampling the patient and getting a result back may mean the difference between successful treatment or not.

What is needed is a simple to use, rapid test for the diagnosis and monitoring of such diseases, and the answer was an electrochemical biosensor array.

## What is It?

In early 2006, doctors at Korea University worked to create a simple to use, point-of-care/home use method of testing for various liver conditions, the result of which is the biosensor array.

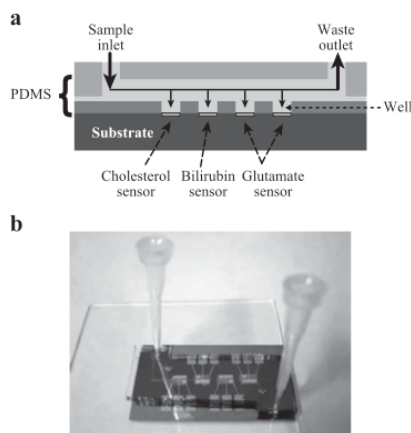
The biosensor array is a small wafer with a number of indicator solutions present to test for various substances known to be common markers for various diseases of the liver. Specifically, it measures the presence of cholesterol, bilirubin, and glutamate

## How Does It Work?

Samples are placed into small channels on the wafer. The wafer itself has a separate electrode for each of these channels, and each channel is actually a porous layer of silicon, which drastically increases the surface area for the sample to actually react to the sensor

## The Results

The device sensitivities were comparable to conventional methods. It could be used with multiple samples without significant cross interference. It opens the door for quick, efficient analysis of test samples without the need to wait for sampling to be done at a remote lab location



## Source

Min-Jung Song, Dong-Hwa Yun, Nam-Ki Min and Suk-In Hong:  
Electrochemical Biosensor Array for Liver Diagnosis Using Silanization Technique on Nanoporous Silicon Electrode. J. BIOSCI. BIOENG., Vol. 103, 32-37 (2007)

