

A NANOTECHNOLOGY-BASED ELECTROCHEMICAL DNA SENSING APPARATUS AND METHOD

DNA is a code that contains the building instructions for all organisms and is the ultimate identification card. For example, the DNA code of a particular bacterium can tell if that particular strain of the bacterium is harmful or not. DNA sensing and recognition devices are therefore essential for accurate detection of bacteria and other microbes, as well as for detection and identification of viruses, and there is a critical need to develop better methods and devices for DNA detection.

The current invention developed by researchers at the University of Missouri is a new technology that will increase the DNA sensor sensitivity, specificity, and sensing speed over current methods. This novel invention consists of an electrolyte cell, an electrochemical measurement device, and a nanostructured ceramic base electrode. The device is so sensitive that it does not require amplification of the DNA by PCR and it is advantageous due to its reusability, its increased detection speed, and its specificity.

POTENTIAL AREAS OF APPLICATIONS:

- Recognition of bacteria, viruses and protozoans of medical and public health importance
- Environmental analysis such as water quality monitoring
- Biological attack and prevention
- Food safety
- Genetic research and application
- Pathology and criminology

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