



# Highly Sensitive Point of Care Sensor

Using Graphene for cost-effective, high-throughput diagnostics. **Available for license**

## Basic overview

Sensors, with the capacity to measure multiple parameters in parallel, are a **critical component in reduction of energy costs**, increased health and safety-through monitoring of the environment and rapid diagnostics of disease. The high surface-to-volume ratio of Graphene should **allow single molecule detection sensitivity** required for the latest fast response sensors.

Sensors developed by CRANN, Trinity College Dublin, researchers have the flexibility to measure multiple components, can be manufactured at low cost and are ultra-sensitive, enabling rapid and early detection.

## Applications

As with many nano-materials Graphene offers a platform technology with potential to be utilised in numerous applications. In particular, Graphene as a component of a point of care sensor could be used for immediate disease diagnosis by medical staff, thus minimising effort and costs associated with expensive equipment and staff training. This sensor technology is expected to not only have application in the diagnosis of diseases from blood, saliva and urine samples but can potentially be applied to monitoring portable water source purity where many diseases are borne.

## Technology and patent status

This project is sponsored by Science Foundation Ireland and is being run partly in collaboration with The Swiss Tropical Institute in Basle. This technology is in the early stages of development. Proof of concept has been gained for virus detection and progress has been made in the detection of other organisms at lab scale.

International patent application filed in 2011.

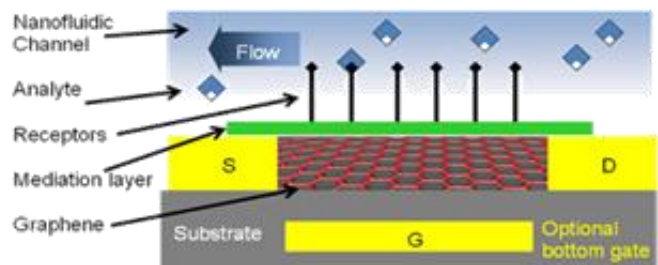
## Advantages

Biofunctional Sensor disease detection is related directly to the molecules of the disease so does not require the use of antibodies in production. In fact, Biofunctional Graphene Sensor technology will not rely on biological components during manufacture which is likely to:

- Reduce unit manufacturing time
- Reduce problems with quality assurance
- Reduce regulatory hurdles in the process of taking the device to market

In addition to these sensors are:

- Cost effective
- Have flexible operation
- Extremely sensitive
- Extremely selective
- Very patient and eco friendly



A schematic diagram showing the basic components of a biofunctional graphene sensor.

## The opportunity

Interest from industry, entrepreneurs and academia involved with medical devices, diagnostics and metrology are invited. Experts in business, electronics, physics and biology can add value to bring this from prototype to product. Various support mechanisms and grants available.

**Inventors:** Georg Duesberg and Prof. Martin Hegner, Trinity College Dublin

**Contacts:** Brendan Ring, Commercialisation Manager-CRANN ✉ [brendan.ring@tcd.ie](mailto:brendan.ring@tcd.ie)  
[www.crann.tcd.ie/Industry-Commercialisation/Available-Technologies.aspx](http://www.crann.tcd.ie/Industry-Commercialisation/Available-Technologies.aspx)

