Researchers from Indian Institute of Science have introduced a novel approach for development of graphene capacitive sensor by exploiting high electric double layer capacitance property of graphene. This capacitance based sensors can find wide applications in healthcare, robotics, aerospace, mining, consumer electronics, chemical and automotive industry.

BACKGROUND

Capacitance based sensors are being used in pressure and level sensing, accelerometers, proximity sensing etc. The performance of capacitive sensor is measured by the degree of accuracy in measuring the change in capacitance of the sensor. It is mainly affected by temperature, pressure and humidity on the dielectric properties and also due to lead and stray capacitance. The low magnitude of performance affects the output signal making it highly prone to noise. Currently, noise reduction is carried out by means of electronic design and shielding technology leading to a limited improvement in performance.

TECHNOLOGY

The high electric double layer capacitance of graphene is exploited to improve the base capacitance of capacitive sensor. Following are the key features of this technology:

- High base capacitance facilitating easy measurement
- High noise immunity
- Simple and cost effective fabrication process
- Multiplatform applicability (ability to measure different parameters like strain, force, displacement etc. with minimum dependence on external parameters).
- Good flexibility

This concept can be modified for many potential sensing applications including shear, tactile, dynamic/static pressure, force, heart beat, impact, breath, speed, flow, displacement, gas sensor etc.
COMMERCIALIZATION

IISc has filed an application for patent grant in India. We are looking for partners for licensing the technology.