

Graphene Layer to Protect Communication Systems



2020-10-18

A collaborative research project involving QUT and Defence aims to develop a printable ultrathin layer of carbon to shield sensitive electronics from electromagnetic radiation.

Professor Nunzio Motta, from the [QUT Centre for Materials Science](#), and Dr Kamal Gupta, from Defence Science and Technology ([DST](#)) Group are investigating the use of graphene, a form of carbon that is just a single layer of atoms, as a printable shielding material.

Developments in micro-electronic technologies have led to the design of miniaturised circuits and subsystems for high speed and high capacity communication systems that are accurate, reliable, sophisticated with advanced functionalities, and are much smaller in size, light weight, and exhibit lower power consumption.

"These electronics systems are also potentially susceptible to electromagnetic radiation, whereby circuits can be upset, reset or thermally damaged, which can lead to the failure of system functionality," Dr Gupta said.

An example of how unwanted electromagnetic radiation can impact on communication systems is when a microwave in the kitchen can interfere with a home's wi-fi network.

The research team will investigate a locally developed inkjet printing technology for printing a graphene film on electronic circuit boards to prevent unwanted electromagnetic radiation from interfering with communication devices.

"The flexibility of inkjet printing will allow the design of multiple patterns and the

superimposition of different layers to target a wide range of frequencies,” Professor Motta said.

The technology developed under this collaboration will be tested further at DST labs.

Read the [original article](#) on Queensland University of Technology (QUT).