

Graphene, an ultra-thin and extremely sensitive material, has long attracted scientists' attention. It is used to create sensors capable of detecting the smallest molecules in the body. However, graphene's high sensitivity is also a problem: when modified to interact with molecules, its unique electrical properties change.

Scientists have found a way to overcome this obstacle. They applied a molecular carbon membrane, only a nanometer thick, as an intermediate layer between the graphene and the capturing molecules. This layer does not conduct electricity and does not disrupt the main characteristics of graphene.

For tests, specialists used aptamers—molecules that can bind to specific molecules, such as biomarkers that play a key role in disease diagnosis. The sensor was tested with real samples from patients' nasal swabs and successfully detected chemokines—proteins important for the immune system's function.

This method allows for the detection of several biomarkers simultaneously, significantly enhancing its diagnostic value.