



drishti

Graphene Mask Inactivates Coronaviruses

 drishtias.com/printpdf/graphene-mask-inactivates-coronaviruses

Why in News

Recently, the researchers from the City University of Hong Kong have produced a **laser-induced form of graphene masks** that inactivate the coronavirus species.

Key Points

- **Graphene Mask and Coronaviruses:**

- Initial tests deactivated two **coronavirus** species. The researchers are also planning to test this mask on the **Covid-19** (SARS-Cov-2) virus.

Coronaviruses are a large family of viruses that are known to cause illness ranging from the common cold to more severe diseases such as **Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS)**.

- The researchers **also tested it on E coli (bacteria)**, which showed an antibacterial efficiency of around 80%. The efficiency can be raised to almost 100% with exposure to sunlight for 10 minutes.

Graphene is known for **antibacterial properties**.

- **Production:** All carbon-containing materials, such as **cellulose or paper**, can be converted into graphene. The researchers described the production of laser-induced graphene as a "**green technique**."
- **Benefits:** It is **reusable**. Can also be produced at **low cost**. It also resolves the problems of sourcing raw materials and disposing of non-biodegradable masks.

Graphene

- It is a **single layer (monolayer) of carbon atoms**. It is **one atom thick**. It is the building-block of **Graphite**.

- **Properties:** It is **harder than diamond** yet more **elastic than rubber**; **tougher than steel** yet lighter than aluminium. Graphene is the **strongest known material**.

Other Properties of Graphene are:

- Lowest resistivity substance known at room temperature.
 - High thermal stability.
 - High elasticity.
 - High electrical conductivity.
 - Electron mobility is high at room temperature.
 - Graphene oxide (GO) membranes can be used to filter common salt from seawater.
- **Uses:** Its **thin composition** and **high conductivity** means it can be used in applications ranging from miniaturised **electronics to biomedical devices** like computers, solar panels, batteries, sensors and other devices.
 - **Carbon Allotropes: Diamond, graphite and fullerenes** (substances that include **nanotubes** and **buckminsterfullerene**) are the important allotropes of pure carbon.

Allotropy is the property of some chemical elements to exist in two or more different forms, in the same physical state.

Source: IE