The “miracle material” that could revolutionize our world

Graphene is a thin layer of pure carbon. It is made up of a single layer of carbon atoms that are bonded together in a hexagonal lattice. It has been termed as the “Miracle Material” for many reasons. It is lighter than a feather, stronger than steel, but also extremely flexible and more conductive than copper. It uses is almost endless. It is a material that can open many doors of scientific research that will change the world for the better. Although people are discovering and inventing new materials all the time, we hardly ever hear about them because they’re often not that interesting. However the disadvantage of Graphene is that there is no good general methods that produces Graphene quickly, precisely and in large enough quantities. This prevents people from having access to it on the normal mass-market.

Graphene uses are:

- Graphene repels water and when mixed with polymer works as a rust-proofing coating.
- Graphene together with oxygen forms Graphene oxide which is remarkably good at absorbing radioactive waste.
- Burn temperature: 350 °C (662 °F)
- Every atom of Graphene is available for chemical reaction from two as a result of it 2D structure. It is the only form of carbon that can do that.

Physical properties of Graphene:

- Thinnest material ever invented and it is the first truly 2D material ever made.
- Strongest material ever measured. It is even stronger than diamond. It is also believed to be the strongest material yet discovered and is 200 times stronger than steel.
- Stiffest known material.
- Most stretchable crystal. You can stretch it 20-25 percent of its original length without it breaking.
- Record thermal conductivity—carrying electricity better than even one of the best conductors such as copper.
- Highest current density at room temperature (million times of those in Cu).

Chemical properties of Graphene:

- Graphene repels water and when mixed with polymer works as a rust-proofing coating.
- Graphene together with oxygen forms Graphene oxide which is remarkably good at absorbing radioactive waste.
- Burn temperature: 350 °C (662 °F)

Beneficial uses of Graphene:

- Rust Proofing: Graphene repels water and is highly conductive and that keeps steel from coming into contact with water and slows down the electrochemical reactions that oxidize iron.
- Speakers: The Graphene speakers are thin and because they transmit the heat energy from the electrical current to make sound, they can be made into any shape.
- Cleaning up Radioactive waste: Graphene oxide is remarkably good at absorbing radioactive waste.
- Bomb detectors: Graphene foam can pick up small concentrations of the nitrates and ammonia found in bombs and explosives.
- Water purification is among graphene’s potential global uses.

Done By:
Aa’isha Varachia, Naailah Lakhi & Firdous Safodin