

# Graphene

Technology helps the world advance. As humans it's in our nature to investigate, innovate and solve problems.

This curiosity means we make things, create things and develop new technologies. You can look back thousands of years for basic examples of technology pushing civilization forward.

Most people don't understand the rapid change technology has on their life...or the speed at which change occurs.

For example, the following are the five 'Great Ages' of human progress and their approximate duration:

- **Stone Age** — 3.4 million years
- **Bronze Age** — 2,500 years
- **Iron Age** — 500 years
- **Industrial Revolution** — 80 years
- **Information Revolution** — 20 years

You'll notice the length of each 'age' diminishes as technology improves.

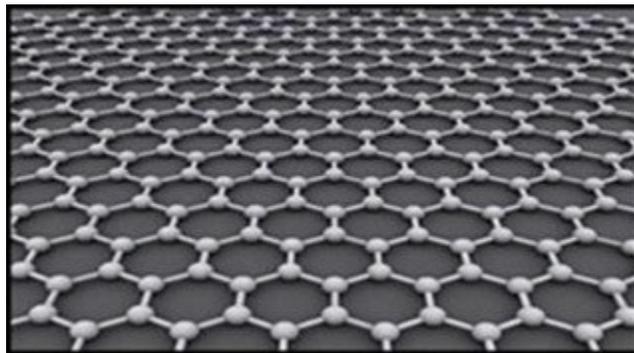
The computer industry calls this trend 'Moore's Law'. It dictates that computer processing power doubles every 18 months.

200 times stronger than steel...150,000  
times thinner than a human hair...more  
flexible than a sheet of paper

You may have heard about **Graphene**.

If you haven't, it's a newly discovered, very special refined form of graphite. It's a one-atom-thick sheet of densely packed carbon atoms arranged in a honeycomb lattice.

Take a look:



Put simply, it's a sheet of carbon atoms 150,000 times thinner than a human hair.

Under a powerful microscope, it looks like chicken wire.

But what's so special about it?

### **Everything.**

For starters, it's 200 times stronger than structural steel...

It's so strong you could suspend an elephant from a single strand of Graphene...**and the strand would not break.**

It's extremely lightweight too...

Soon, everything from bicycles and boats to aeroplanes and cars could be made out of graphene composites.

*And when they are, their energy efficiency and durability could skyrocket.*

But that's just the beginning of what this new 'smart material' can do...

Not only is it the strongest material researchers have ever tested — it's also one of the best conductors man has ever found.

IBM has already created a graphene-based processor capable of executing 100 billion cycles per second.

Researchers believe that in the future, a graphene credit card could store as much information as today's computers.

Be clear...

**This one material alone could prove more revolutionary than — and soon REPLACE — plastic, Kevlar and the silicon chip**



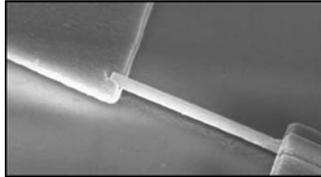
**Kiss goodbye to shattered screens!**

## The Smallest Revolution in History...

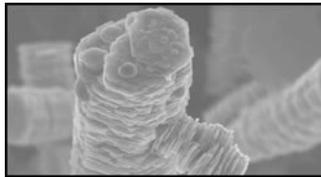
Down at the molecular level there's a lot of friction. Particles can stick together really easily. This means new and complicated structures can be formed.

Today scientists are experimenting with different conditions to see what sorts of new molecular structures they can create.

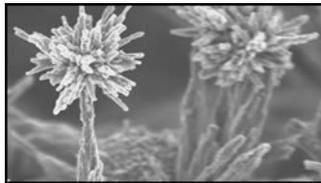
The results are astonishing. Some look like thin wires...



Some look like pancakes...



Others look like flowers...



All these different molecular structures have different properties.

And soon they'll change the way we live...

From solar panels you can spray onto your roof...to *computers and batteries so small they are invisible*. From mobile phones that you can stretch, twist and even imbed into your clothing...they'll make stronger houses...tougher cars...and even make us healthier!

Medical researchers are already looking at using nano-particles to deliver drugs or hunt down cancerous tumours.

**Just imagine 'nano medicines' patrolling your body, hunting down diseases and zapping problems as soon as they arise...**