



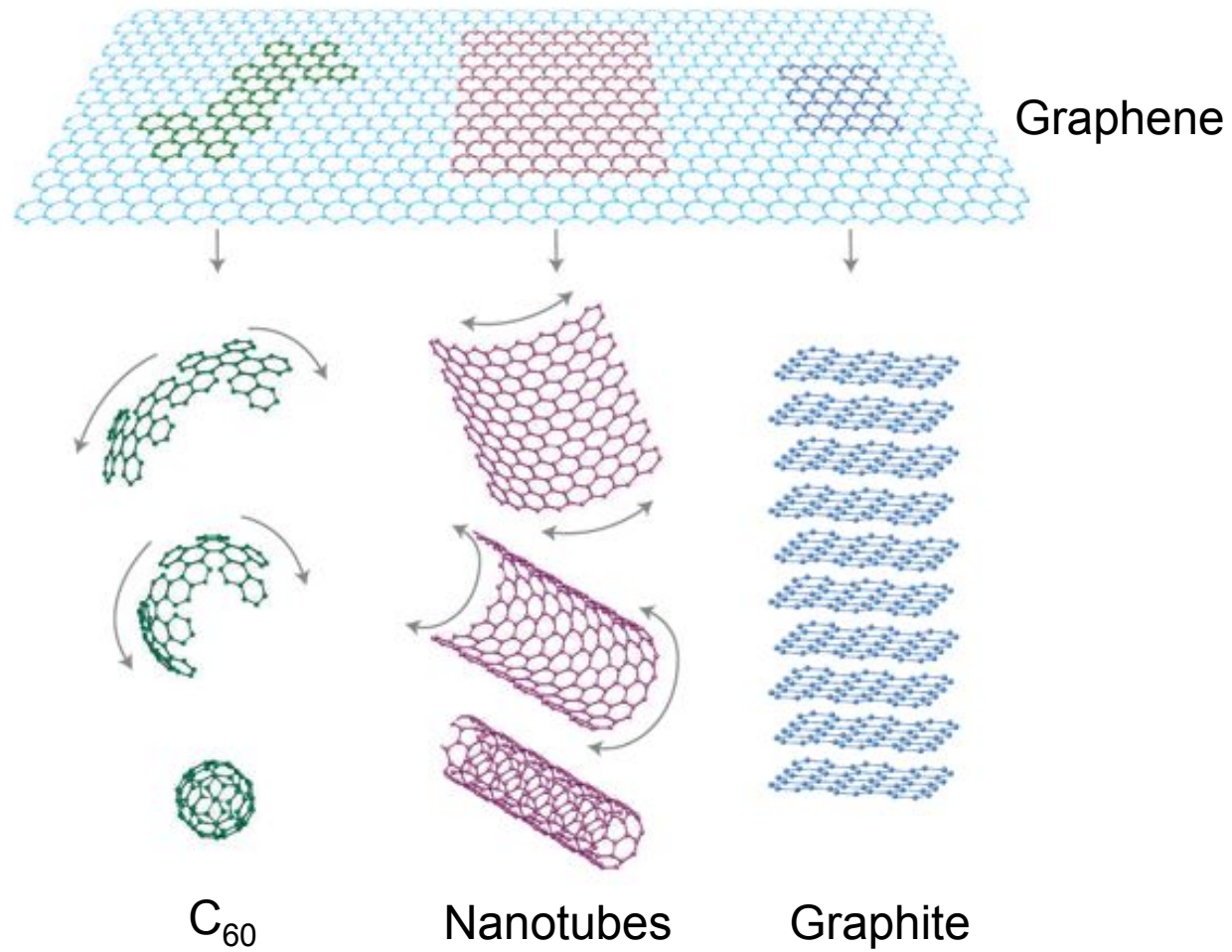
The Mining Investment Experts

Escaping the Malaise of the Bulks

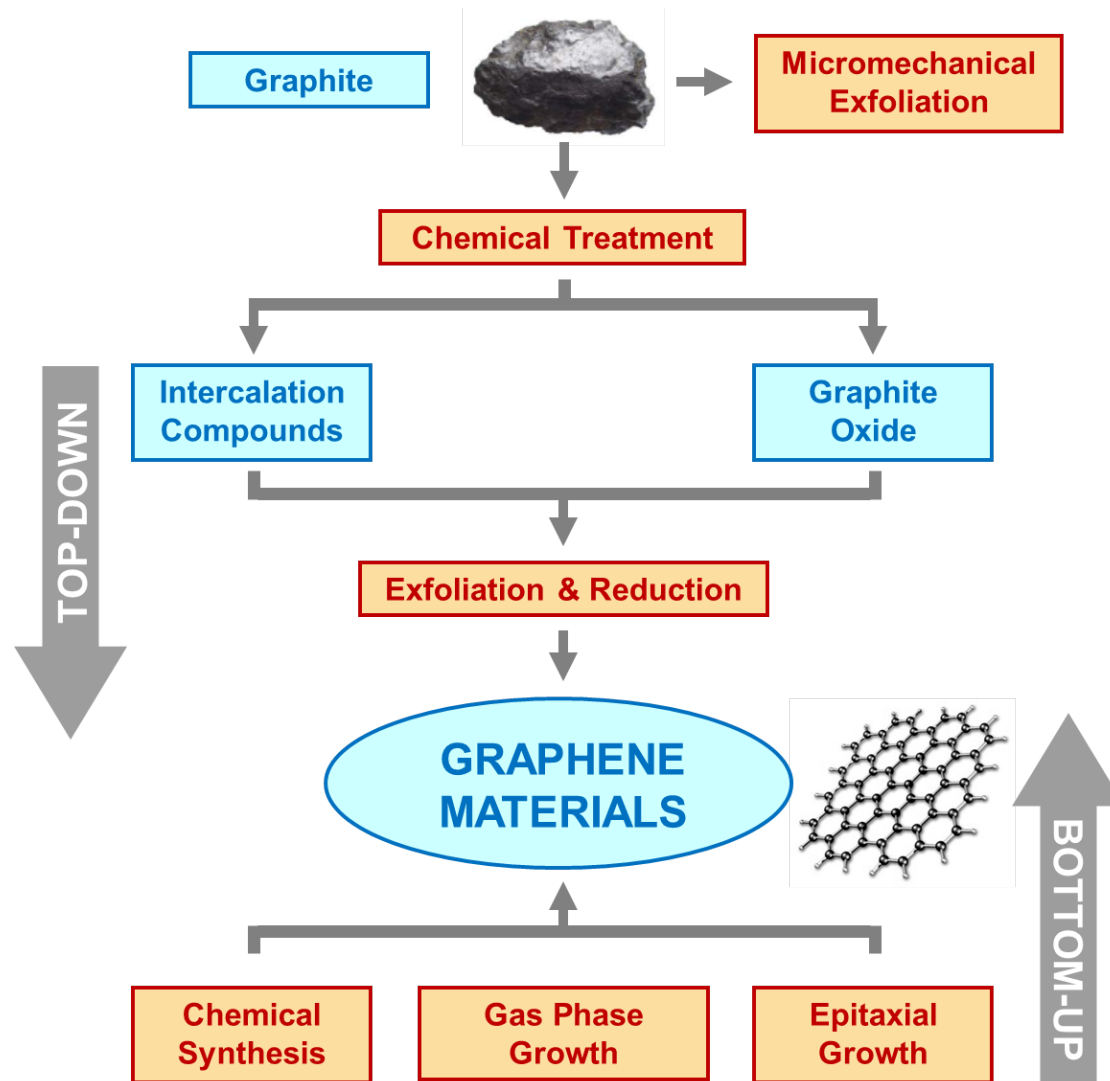
*Introducing new materials and technology
to add zest to the mining sector*

RIU Resources Roundup Conference – Sydney, May 2015

A Two Dimensional Material



Different Ways of Making Graphene



Making the most of wonder material

GRAPHENE

Graphene is a form of **carbon**
in sheets one atom thick.

Carbon is **everywhere**,
in your pencil for example.

Graphene will have a great impact on
our future society, economy & environment

– EU in the lead –

Graphene flagship [@GrapheneCA](https://twitter.com/GrapheneCA)
www.graphene-flagship.eu

€1 billion over 10 years

142 partners in 23 countries

Investment made under

• Future & Emerging
Technologies (FET) Flagships
[@FETFlagships](https://twitter.com/FETFlagships)

• Horizon 2020 [#H2020](https://twitter.com/H2020) [@DigitalAgendaEU](https://twitter.com/DigitalAgendaEU)

with funding from Member States & industry



Graphene has exceptional properties...

STRONGER

it is the **most resistant** &
impermeable membrane ever.
It is **200x stronger** than steel...



LIGHTER

yet, it is **6x lighter**,
extremely thin, transparent &
bendable

FASTER

electron mobility is
70x higher than in silicon.
It **conducts heat**
10x better than copper



...and limitless potential applications
in many sectors such as ...



energy



computing



engineering



health



bendable & lighter
smartphones & laptops

batteries that take **only minutes** to
charge from exposure to sunlight,
last longer & are lighter



new medical technologies
from artificial retinas
to tissue regeneration

lighter & more energy efficient
aircraft, trains & cars



alternative to precious materials in
chemical processes will revolutionise
the worldwide supply of goods

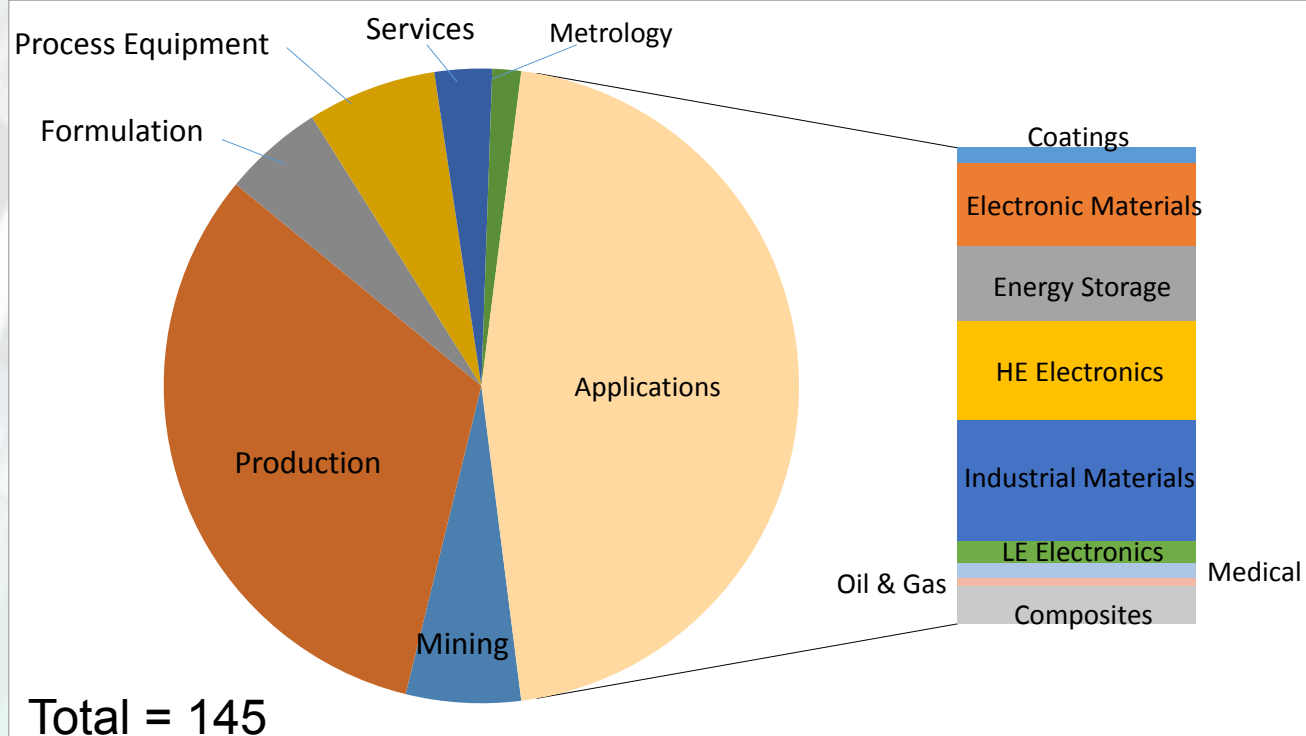
super-fast broadband internet
downloading 3D films in a matter of
seconds



new water filtration technologies
to turn sea water
into drinkable water

Areas of Graphene Activity

Graphene activity by company numbers

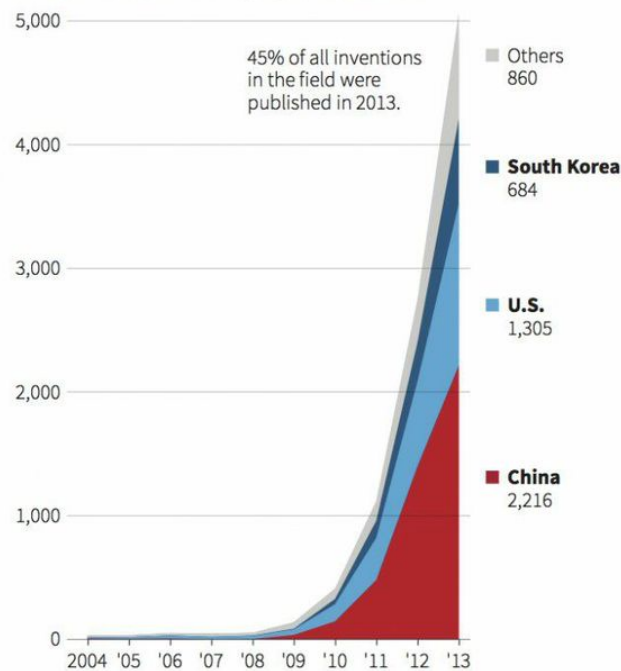


Graphene Patents Going Through the Roof

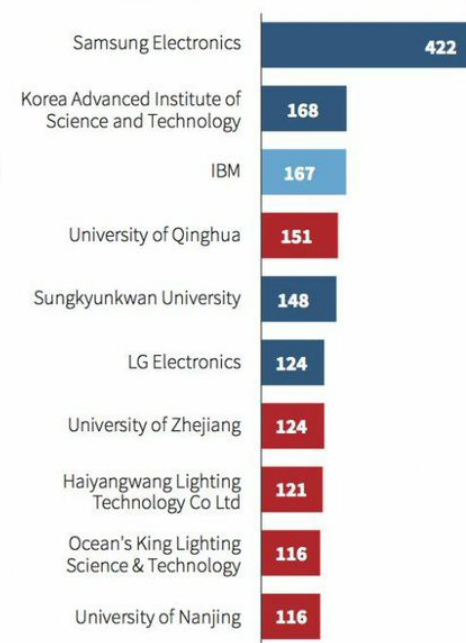
Graphene patents

Analysis of inventions involving the manufacture or application of graphene shows dramatic growth over the last decade from just 33 inventions described in published patents in 2004 to over 5,000 inventions last year

Countries with the most graphene inventions



Top ten companies/institutions with the most patents



► Graphene, a one-atom thick layer of graphite, is stronger and harder than diamond, yet can be stretched by a quarter of its length like rubber.

► First mentioned in a study in 1987, it was isolated in a stable free form in Manchester, England in 2004.

► Graphene inventions apply to technologies such as touch screen displays, lithium ion batteries, fuel cells, mobile phones, LED displays, and electronic components in general.

Source: Reuters

C. Inton, 29/04/2014

REUTERS



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