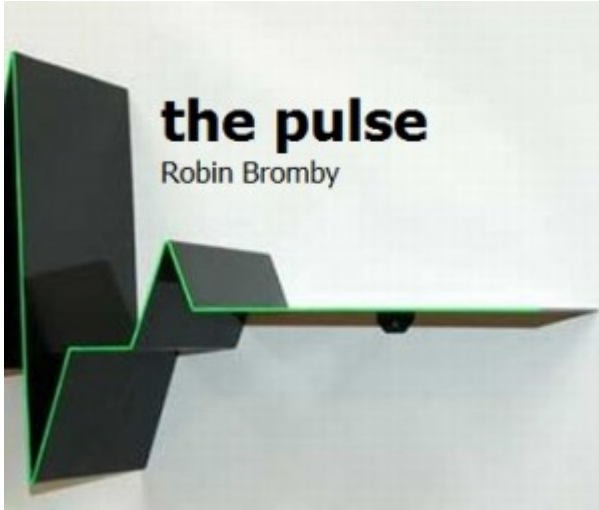


Revealed: The race for graphene supremacy



British broadcaster BBC seems to have stirred up a hornet's nest with its reporting on what Roger Bade at London brokers Whitman Howard calls "the pathetic nature of graphene research in the UK". He was alarmed by the report that Asian countries are snapping up the bulk of graphene patents, and the US is not far

behind. "Yet another example of inventions made for others to exploit?" he asks.

It was at Manchester University that scientists Andre Geim and Konstantin Novoselov demonstrated the remarkable properties of graphene and went on to win the 2010 Nobel Prize in Physics.

A blogger at *Electronics Weekly* has called for Britain to appoint a "graphene czar". British industrial designer Sir James Dyson said this to the BBC magazine, *Radio Times*: "Materials like graphene – discovered at Manchester University – offer hugely exciting opportunities for new technology. Engineering postgraduates need to be encouraged with generous salaries. A salary of £7,000 a year for postgraduate research is insulting – hardly enough to incentivise smart minds to stay on.

It was a very thorough report by David Shukman, the BBC's science editor, that has set the ball rolling. He quotes a study by the UK-based patent consultancy, CambridgeIP, which shows the following rating for graphene patents:

China	2,204
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US entities	1,754
South Korea	1,160
Britain	54

At the end of 2012, there were 7,351 patents lodged around the world for graphene processes.

Of commercial enterprises, Samsung is in the lead with 407 patents. That is an extraordinary figure for one company. IBM is second with 134.

When it comes to institutions which hold patents, these are the leading ones:

- Sungkyunkwan University, South Korea – 134
- Zhejiang University, China – 97
- Tsinghua University, China – 92
- Rice University, US – 56
- MIT – 34
- Manchester University – 16

Quentin Tannock, the chairman of CambridgeIP, told the BBC: “Britain has got a reputation for being very canny, having very good inventors, so the race isn’t over. But my concern is that in Britain there isn’t an appreciation of just how competitive the race for value in graphene is internationally and just how focused and well resourced how competitors are.

“And that leads to a risk that we might under invest in graphene as an area and that therefore we might look back in 20 years’ time with hindsight and say ‘that was wonderful, we got a lot of value, but we didn’t get as much as we should have done’.”

The BBC also quoted the head of graphene research at the National University of Singapore, Professor Antonio Castro Neto. He said the sector was now highly competitive and it was still uncertain who was going to win the race.