

Cafe Scientifique - Nanotechnology

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Photo: Vladimir Korolkov, The University of Nottingham

'Nano' has become a fancy word to sell miniaturised devices, and some science-fiction filmmakers used it to name the 'magical' technology that moves the plot on. In the laboratory, working at the nanoscale means moving atoms



around with useful effects on our scale, said Michael Fay, the invited speaker in this year's first Nottingham Café Scientifique and a researcher at the Nottingham Nanotechnology and Nanoscience Centre.

Fay used his twenty-minute talk to open the debate about the fear and the hype around nanotechnology. Fay said that much of the fear comes from the fact that this is a technology people can't see. In medical applications, nanocapsules are used to deliver drugs to specific sites in the body and then steadily release them there. From nanocapsules, one can extrapolate swarms of nanorobots. "This is not going to happen," said Michael Fay, "because it's ridiculous difficult to make robots that work at that scale. When you do things at that scale, atoms do tend to go where they want to go, not just where you want them to go."

But, from the agendas of governments to movie scriptwriters, people didn't wait to create the hype around nanotechnology and its future applications. However, nanotechnology is not shrinking things, as one movie pretended. "If an area becomes a Hollywood plot device as nanotechnology has done, people may get a skewed view of the area," Michael Fay said to LeftLion before the event.

As usual in this weekly Café Scientifique, the short presentation was followed by one hour or so where people had the chance to ask questions. "What differentiates the Café Scientifique from an academic lecture is the unusual balance of the initial talk to the time given to questions," said Hugh Williams, a retired mathematician and the man behind finding the speakers. "You don't come just to sit and listen. The bits that people are really interested in get developed through their questions."

Fantastic Voyage **(1966) - not real nanotechnology**

Most of the attendees are not experts in the topic, but that makes it even more challenging to the speakers. “We warn speakers: ‘Don’t expect trivial questions’,” Williams said. In one of the questions, Michael Fay was asked why we don't



see the emotion of love, instead of fear, when we talk about nanotechnology. He replied that love for a technology may create unmet expectations. “To some extent, in nanotechnology, fear and love can both be dangerous in the long-term future. To the general public, the fear comes not necessarily from ‘this technology is evil’, but ‘this technology may not be used right’. If you have sufficient regulation, they trust that this is for our benefit.”

Answering a question about science in fiction, Fay said, “In fantasy films magic does it, but in scientific films they got to invent some sort of magical technology doing it. I just don't want them to pretend that some technology that already exists does something it doesn't.” Fay's advice was, “Look at what is happening in science and try to extrapolate it sensibly.” This is how clever ideas proposed in the Star Trek series became commonplaces today, he added.

The miniaturisation of the transistor, through its impact on mobile technologies, is possibly the best application of nanotechnology so far, said Michael Fay. However, many of the products in this field of research are still behind commercial large-scale production. “At the moment, a lot of the products are still being tested in experimental scientific labs at universities.” There is always a gap of time between a scientific finding and the work of engineers to find useful applications and cost-effective means to fabricate them.

In the next Café Scientifique, Ebola will be the topic of discussion, introduced by Jonathan Ball, Professor at the University of Nottingham.

Nottingham Café Scientifique took place on Monday 19 January at The Lord Roberts, Broad Street.

[Nottingham Café Scientifique](#)

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