

How much?

NERC is already funding approximately £750,000 worth of research in this area through recent awards. A further £500,000 will fund small exploratory grants under the Environmental Nanoscience Initiative. This will help researchers begin to answer these questions and the information will be used to inform government policy. **A funding round for grants is due to be announced in September 2006.** More information on current and future research, workshops and useful science and policy links can be found on the ENI webpage (below).

Who?

The Environmental Nanoscience Initiative is funded by the Department for Environment, Food and Rural Affairs, the Natural Environment Research Council and the Environment Agency.

In addition to providing funds for research, the Environmental Nanoscience Initiative will: bring together scientists from across the UK and beyond, build research capacity, encourage knowledge transfer, and forge links with international researchers and policy makers.

Contacts

Programme Co-ordinator

Richard Owen

Tel: +44(0) 117 915 6805

Email: richard.owen@environment-agency.gov.uk

Other contacts

Lucy Parnall Email: lcpa@nerc.ac.uk

John Garrod Email: John.Garrod@defra.gsi.gov.uk

More information

www.nerc.ac.uk/research/programmes/nanoscience



ENVIRONMENT
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Small World

The Environmental
Nanoscience
Initiative

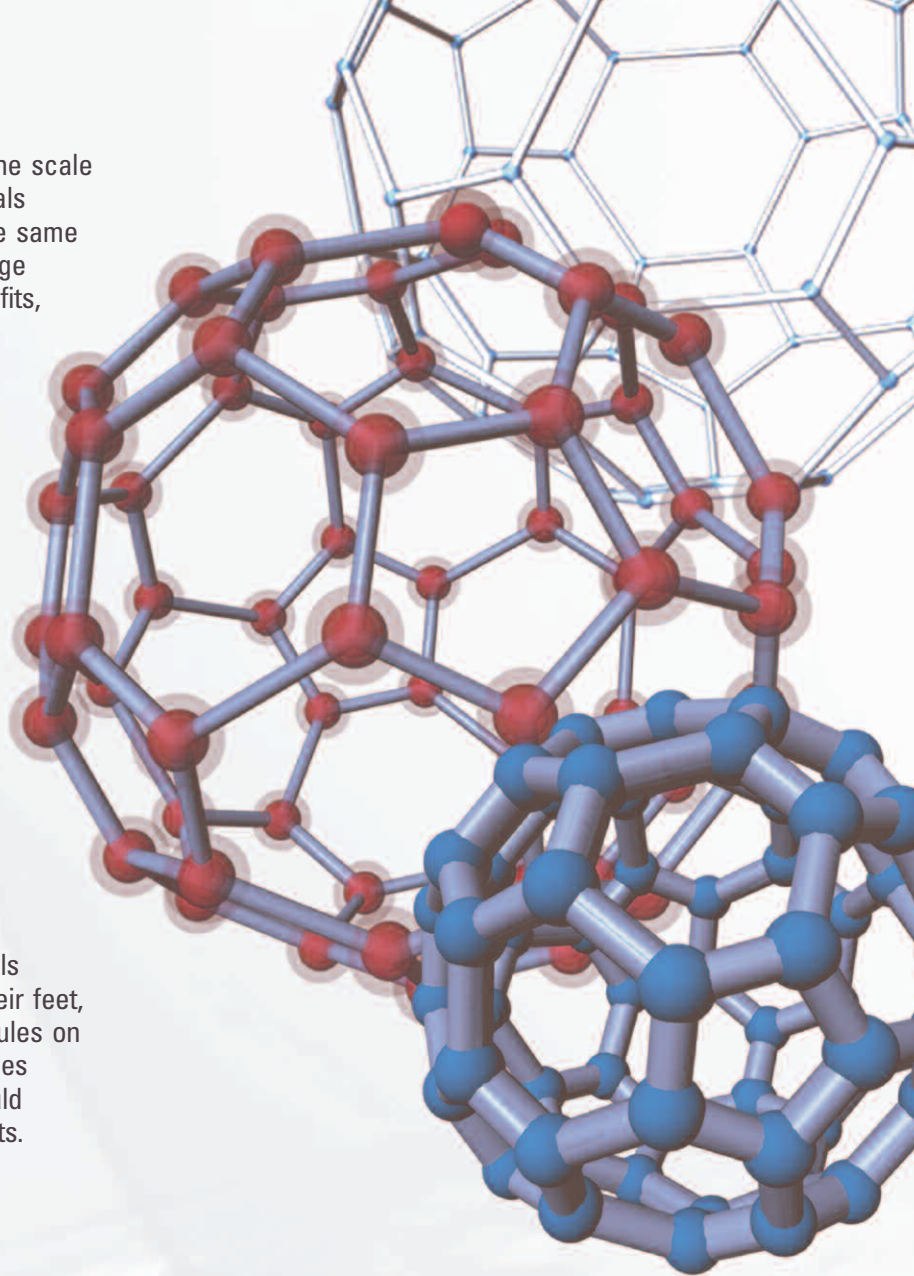
Department for Environment, Food and Rural Affairs
Natural Environment Research Council
Environment Agency

What is nanoscience?

Nanoscience is the science of the very small, on the scale of a billionth of a metre. At this scale some materials behave radically differently from larger forms of the same substance. Such enhanced properties can offer huge potential economic, health and environmental benefits, which in-turn is driving an explosion in nanotechnologies research. Nanocomposites, nanotubes and engineered nanoparticles are all now in production, producing novel solutions in many industries - from suncreams to tennis racquets. Nanoscience may be about the science of the very small, but it's big business, with a predicted global market value of over 1 trillion US dollars in the next 10 years.

Nanoparticles are not new. They occur widely, from volcanic dust to atmospheric pollution. What is new is the scale of manufacture of novel nanoparticles and other nanomaterials and our ability to exploit the enhanced properties of materials when produced at this very small size.

Nature also makes use of nanoparticles and nanostructures. Geckos are so good at scaling walls because they have evolved nano-scale hairs on their feet, which are small enough to interact with the molecules on the surface of a wall, creating weak attractive forces allowing them to climb effortlessly. If scientists could replicate this trick they too could scale dizzy heights.



What is the potential of nanoscience?

The potential for nanoscience is huge. For example:

- nanofuel additives that could help reduce emissions and particles from diesel engines
- nanoparticles that could help remove pollution from soils and groundwaters
- nanoparticles for targeted drug delivery for disease diagnosis and treatment
- effective nanofiltration systems for purifying water

The waxy lotus leaf repels water and keeps clean by using nano scale hair-like tubes, which grow on tiny bumps on its surface. Scientists can now mimic this feature to produce water-proof clothing and self-cleaning paints, roofs and glass.



The Environmental Nanoscience Initiative

What are the benefits and risks to the environment from nanomaterials?

The Environmental Nanoscience Initiative (ENI) aims to provide some answers, acting as a portal for environmental nanosciences research in the UK and a bridge between fundamental science into the benefits and risks of nanotechnologies and policy development. The initiative will look at potential risks of nanoparticles where there is much uncertainty. It will address questions such as:

- If nanoparticles have different properties from larger particles of the same material, do they also pose different risks once they enter the environment?
- How long do nanoparticles stay in the environment?
- How do they move through the environment?
- Do they affect other substances in the environment, making that substance toxic?

