

## YOUR SCIENCE YOUR SAY - EPA-FUNDED NANOTECHNOLOGY CASE STUDY

### 'Smart' filters to remove metal from water<sup>5</sup>

*Professor Michael Morris and Dr Justin Holmes, University College Cork*

The ability to remove metals from water can be greatly improved by technology developed at UCC that uses a 'smart' material as a key part of the filtration system. This project is exploring the development of new nanostructured materials (silica) for effective treatment of various pollutants including nanoparticles. Recent work by the research team has demonstrated removal of 99.9% of metal ions (including chromium and lead) from polluted wastewaters and the team is now in the process of developing passive absorbents for removal of volatile organic pollutants.

The work builds on methods and techniques previously developed by the researchers. Highly porous structures that have very high surface areas, and may be chemically tailored to selectively absorb metal contaminants, are being fabricated. The design of novel nanomaterials and the field of nanotechnology are advancing rapidly and it is now clear that nanoparticles may have impacts on health. Part of the work at UCC will examine the effectiveness of these technologies in absorbing or filtering nanoparticles. The system is currently on trial in both a domestic setting in West Cork, and at a dairy operation. The image is of a Scanning Electron Microscope (SEM) photograph of mesoporous silica.

(Source: Environmental Protection Agency (2009) *Innovation for a Green Economy: Environment and Technology: a Win-Win Story*, Case Study 3, p.18.)

<sup>5</sup> Full project title: *The use of mesoporous silicas to absorb and separate metals and nanoparticles from aqueous or organic solutions.*

