

Nanoparticles – Power to be Reckoned With

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The University of Leicester is the co-ordinating partner in an international project involving information that can be stored on nano-particles.

The project, entitled Nanospin, aims to use the novel properties of nanoparticles in the building of new materials and devices and, looking even further ahead, to functionalise the nanoparticles themselves, by making them from more than one element, or as core-shell structures, so that each is able to become a device.

A simple example is a magnetic nanoparticle that can store a single data bit of information by defining the direction of its magnetisation. The data storage density of modern computer disks is impressive but if it becomes possible to store each data bit on a single nanoparticle, then storage densities 100 times greater could be achieved. To put this into context, such a nanoparticle medium could store about 2 million books, or a large library, on an area the size of a postage stamp.

The Nanospin partnership involves the Universities of Leicester, Reading and Surrey (UK), NCSR "Demokritos" (Athens, Greece), Sumy State University (Ukraine), CNR-ISM Rome (Italy), Universitat de Barcelona (Spain) and NT-MDT Co, Zelenograd (Russian Federation).

Chris Binns, Professor of Nanoscience in the Department of Physics and Astronomy at the University of Leicester, commented:

"Nanotechnology, that is, the use of structures whose dimensions are on



the nanometre scale to build new materials and devices, appears to hold the key to future developments in a wide range of technologies, including materials, science, information technology and healthcare.

"An important aspect of nanotechnology is the recognition that sufficiently small pieces of matter (nanoparticles) have electronic magnetic and optical properties that are different from the bulk material.

"In addition, their properties are size-dependent and so nanoparticles can be considered as new building blocks of matter or 'giant atoms', whose properties can be tailored."

Source: University of Leicester

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