Major Award for Carbon Natotube Partners

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CSIRO and the NanoTech Institute of the University of Texas at Dallas have won the 2005 Avantex Innovation Prize for their breakthrough discovery of how pure carbon nanotubes can be spun into strong, flexible, electrically conductive yarns.
Interest in the potential for carbon nanotubes to create a range of futuristic materials was sparked when details of their structure were revealed in the early 1990s.
Measuring about a millionth of a millimetre in diameter, carbon nanotube fibres are immensely strong. However, they also possess two unique characteristics - excellent electrical and heat conductivity.

Following their discovery, a vigorous international research effort began to develop carbon nanotube production techniques targeted at patentable applications that exploit their extraordinary properties.

Based on their research into published information about the fibres, a team of CSIRO Textile and Fibre Technology researchers, led by Ken Atkinson, began work in 2002 to show that carbon nanotubes could act like conventional fibres by responding to 'twist' and being capable of self-locking into a yarn.

Mr Atkinson presented the team's finding to researchers at the NanoTech Institute, in November 2003 and later demonstrated that the nanotube forests grown at UTD could be hand twisted into a short length of yarn only a fraction of the width of a human hair. Yet this yarn was capable of supporting the weight of a pen.

NanoTech Institute Director, Dr Ray Baughman, says further refinement of the spinning process could lead to the production of nanotube yarns suitable for manufacturing high-value commercial products.

“These might eventually range from artificial muscles, electronic textiles, antiballistic clothing, satellite tethers, filaments for high intensity x-ray and light sources, and yarns for energy storage and generation that are weavable into textiles,” Dr Braughman says.

The 2005 Avantex Innovation Prize ('New Materials' category) will be presented to the team today - at the AVANTEX Technical Textile Congress in Frankfurt, Germany - for their collaborative effort in: “The application of the science and technology of spinning to produce pure multi-walled carbon nanotube yarns with useful new properties”.