



**Topic:** Carbon Nanotube Fibres, synthesis, structure control and mechanical properties

**Speaker:** Prof. Alan H. Windle  
Department of Materials Science and Metallurgy  
University of Cambridge, UK

**Date:** Tuesday, 20 August 2013

**Time:** 2pm to 3pm

**Venue:** LT4 (map of NUS can be found at <http://map.nus.edu.sg/>)

**Host:** Prof. Khoo Boo Cheong  
Director, Temasek Laboratories @ NUS

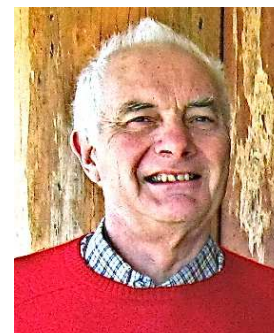
### Abstract

Prof. Alan H. Windle has claimed to have made the strongest ribbon of material ever. The Cambridge team is making about 1 gram of the high-tech material per day, enough to stretch to 18 miles in length. "We have Nasa on the phone asking for 144,000 miles of the stuff, but there is a difference between what can be achieved in a lab and on an industrial level," says Alan Windle, professor of materials science at Cambridge University, who is anxious not to let the work get ahead of itself. The Cambridge team have found a way of combining separate nanotubes into structures that bind to form longer strands.

In many ways single-wall carbon nanotubes can be seen as the ultimately rigid polymer molecule, and this perspective has stimulated new routes for processing. Current research centres on a process by which carbon nanotubes form an aerogel in the CVD reaction zone, and are then wound out of the reactor as a continuous fibre. The properties of these fibres show huge promise as a cheaper and better replacement for carbon fibre. The science ranges from reactor thermodynamics and kinetics through issues of orientation and condensation of aerogels to an understanding of the physics of the exceptional properties of the fibre. In addition to their mechanical potential, several projects address the electrical properties of nanotubes, including interaction with electromagnetic radiation, for applications as diverse as power transmission, EM shielding and cancer therapies.

### About the Speaker

Prof. Alan Hardwick Windle is a British material scientist from the University of Cambridge. He earned his BSc from Imperial College London, and a PhD from the University of Cambridge. He was the Head of Department of Materials Science & Metallurgy from 1996 to 2000 and thereafter the Executive Director of The Cambridge-MIT Institute from 2000 to 2003. He is also a Fellow of Trinity College, Cambridge. In 1997 he was elected a Fellow of the Royal Society. His research team is based around the creation and exploitation of carbon nanostructures in materials science. In addition, as Director of the Pfizer Institute for Pharmaceutical Materials Science, he has overall responsibility for a wide range of pharmaceutically related materials projects. He has published over 300 papers, 13,304 citations, H Index 54.



**Admission is free. All are welcome to attend.**