

News and Features

[About Us](#) | [Our Publications](#) | [Contact Us](#)

Edmund optics | worldwide
800.363.1992 | www.edmundoptics.com

more **PRODUCTS**
more **TECHNOLOGY**
more **SERVICE**

Explore Photonics.com | Enter search term | Entire Site | search | Register for a FREE account. Access To: [Community Forum](#) | [Sign In](#)

[Photonics.com Home](#) | [News & Features](#) | [Products](#) | [News Briefs](#) | [Newsletter](#) | [Biophotonics](#) | [Calendar](#) | [Photonics Spectra](#) | [Buyers' Guide](#) | [Community Forum](#) | [Submit Releases](#)

'Revolutionary' Nanotube Growth Method Devised

CAMBRIDGE, England, Aug. 21, 2006 -- A new method of growing carbon nanotubes is predicted to revolutionize the implementation of nanotechnology and the future of electronics. Researchers at the University of Cambridge have successfully grown carbon nanotubes at a temperature that permits their full integration into present CMOS technology (350 °C).

- [Email Article](#)
- [Printer Friendly](#)
- [Save Article](#)

Carbon nanotubes are the driving force for current advances in nanotechnology. They have excellent mechanical and electronic properties, which make them extremely attractive for next-generation electronics. Increasing efficiency through smaller components is key for the miniaturization of technology. The use of carbon nanotubes could find uses from sophisticated, niche applications to everyday electronics, such as mobile phones and computers.

Until now, the growth of nanotubes has been carried out at very high temperatures, and growth below 500 °C was believed impossible -- making the direct implementation of nanotubes into electronic devices unthinkable. Trying to integrate nanotubes above 400–450 °C would in fact damage the intermetal dielectrics commonly employed in CMOS device fabrication.

A group of researchers at the University of Cambridge's engineering department, led by Mirco Cantoro, Stephan Hofmann, Andrea Ferrari and John Robertson, in collaboration with colleagues at the Cambridge Hitachi Laboratory and the Department of Materials Science, University of Cambridge, succeeded in growing single-wall carbon nanotubes at temperatures as low as 350 °C. These nanotubes, grown by thermal chemical vapor deposition (a chemical process often used in the semiconductor industry), are promising candidates for integration into existing nanoelectronic devices.

This result also sheds new light on the possible mechanisms that occur during carbon nanotube growth. Previously, the assumption that the catalyst has to be liquid often dominated carbon nanotube growth model considerations; but at these lower temperatures, evidence has been found of a solid catalyst. The findings extend to the catalytic growth of other nanostructures in general.

For more information, visit: www.cam.ac.uk

[Start a discussion on this article or any photonics topic in the Photonics.com Community Forum](#)

More News and Features

- [Mass-Marketed OLEDs Could Power Lighting Revolution](#)
- [Kodak Selling Unit to Rohm and Haas](#)
- [MiniBooNE Data Clarifies Neutrino Behavior](#)
- [Combined Imaging Techniques Promise Insights into MS](#)
- [324-GHz Waves Reported](#)

THE PHOTONICS DIRECTORY

[Directory Home](#) | [Buyers' Guide](#) | [Corporate Guide](#)

Enter search term | By Company | search

Search the online version of the most comprehensive directory in the industry.

[Subscribe to the Print Directory](#) | [Update Your Listing](#)

Related Searches

- [University of Cambridge](#)
- [carbon nanotubes](#)
- [metal-oxide semiconductor](#)
- [CMOS](#)

pco. imaging

CCD & CMOS Cameras

LET OPTIKOS SUPPLY YOUR INFRARED TEST SYSTEM

Thermal Test Target Generator | Photometric Camera

Blackbody Source | I-SITE™ Software

OPTIKOS
Bringing innovative solutions into focus.

SYDOR OPTICS

Providing custom precision, flat-surfaced, parallel & wedged optics for 40 years.

Prototype to high quantity OEM production volumes available.

Call 585-271-7300 or e-mail us at sales@sydor.com



Complete your Lab

With the latest
CVI Optical
Components
and Assemblies
Catalog

Get your FREE copy now!

CVI® Optical
Components
and Assemblies

photonics.com **COMMUNITY FORUM**

Ask questions. Get Answers. Join the photonics community.

Most Active Topics

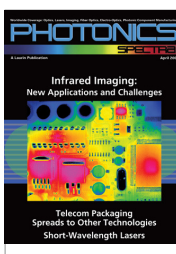
[to all friends](#)

[DESIGNING OF LED SOFTWARE](#)

[Research](#)

[NIR reflectance using a digital camera?](#)

[Force of light to set fluid in motion](#)



Photonics Spectra | April 2007

[Copper Film Enables Accurate Optical Humidity Sensing](#)

[NIR Spectroscopy Determines Healthiest Seeds](#)

[LIGO and Virgo Form Alliance](#)

[Strong Growth Forecast for Filter Modules](#)

[Nanonics Imaging Selects Representatives](#)

photonics **HANDBOOK**

Now Available Online for Registered Users

Sign up today. Registration is FREE!

The Photonics Handbook is a unique collection of technical design and applications articles, as well as technology primers presenting the basics of the photonics technology.

[Nd:YAG Lasers](#)
Standing the Test of Time

[Materials for Optical Coating Deposition](#)
A Wide Selection Is Available

[Vibration Control](#)
Dealing with Workplace Problems

[Complete Table of Contents](#)

Most Emailed Articles

[Laser Technique Detects Anthrax in Real Time](#)

[SD-OCT Could Help Nip Cancer in the Bud](#)

[Wavelength Monitors for Optical Sensing Applications](#)

[Digitizing a Century of Astronomical Images](#)

[Barloworld: Melles Griot Sale Being Finalized](#)