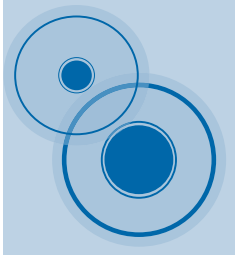
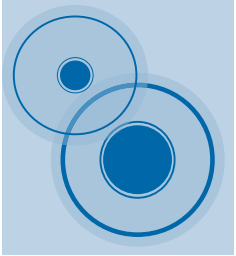
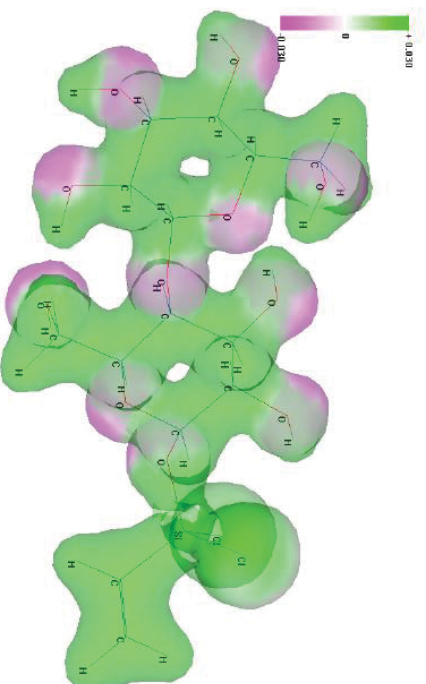
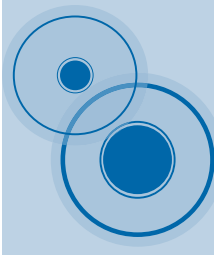
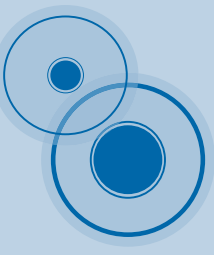
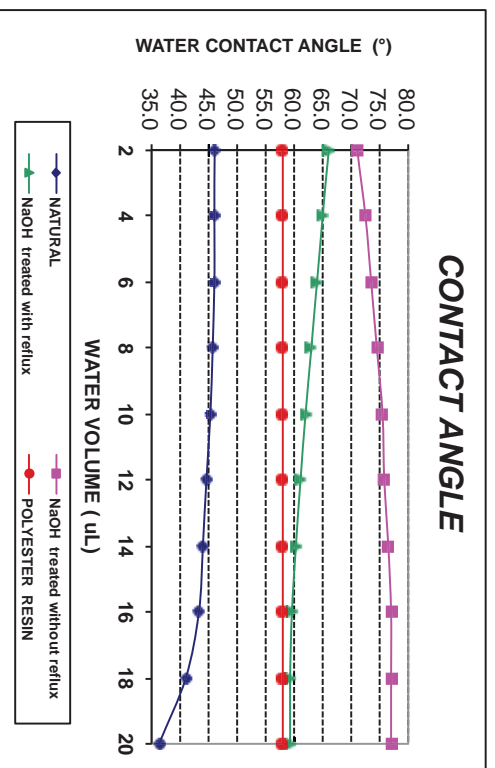
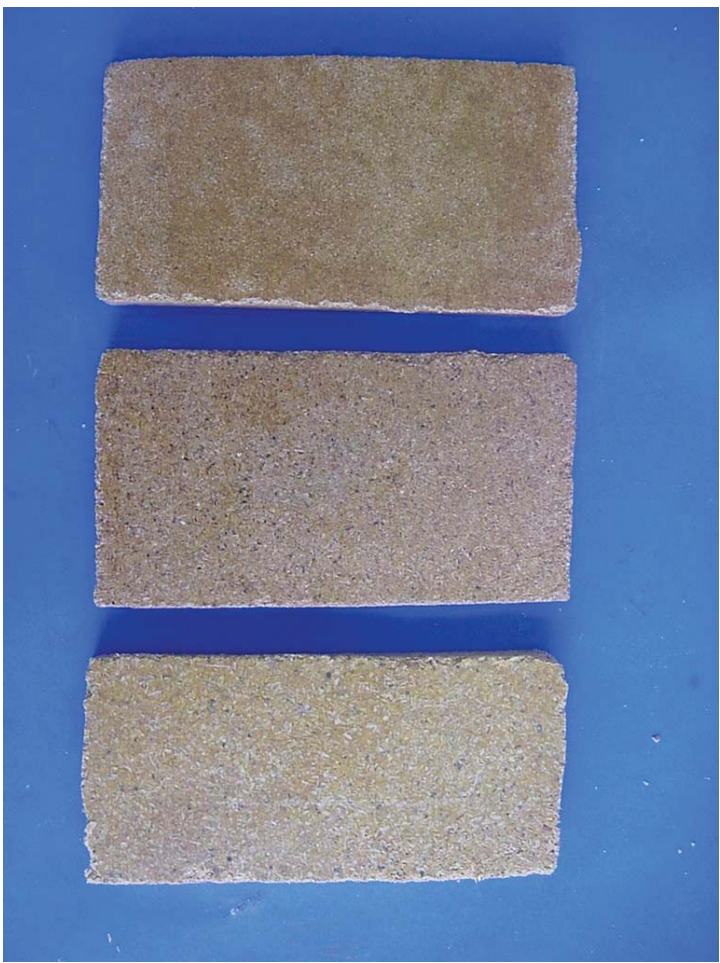
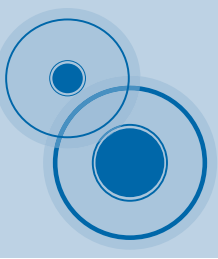
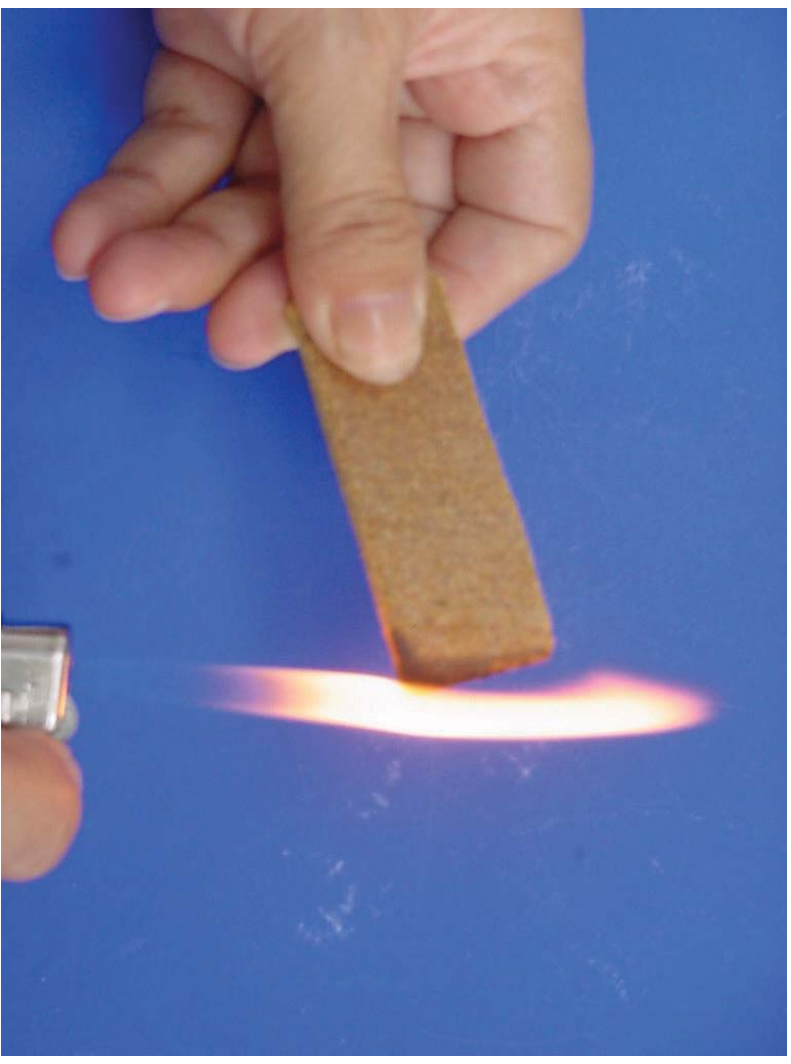


Figure 1. Silanization reactions of the cellulose fiber (rice husk).
 a)Cellulose-TMS, b)Cellulose-DDS, c)Cellulose-TVS.

| CELLULOSE + trichlorovinylsilane (TVS) | | |
|---|--|-----------------------------------|
| Theoretical results by Hyper-Chem 7.0, cm ⁻¹ | Experimental results, cm ⁻¹ | Vibrational mode |
| 633.75 | - | C-C-Si (stretch, C-Si) |
| 668.67 | 672 | Si-Cl (stretch) |
| 823.29 | 825 | Si-O-C (stretch) |
| 1008.11 | 1015 | Si-CH=CH ₂ (band =C-H) |
| 1150.87 | 1154 | CO-Si (stretch) |
| 1621.78 | 1625 | C=C (stretch) |



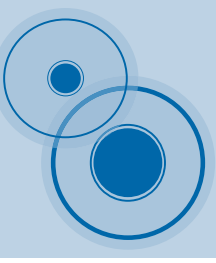
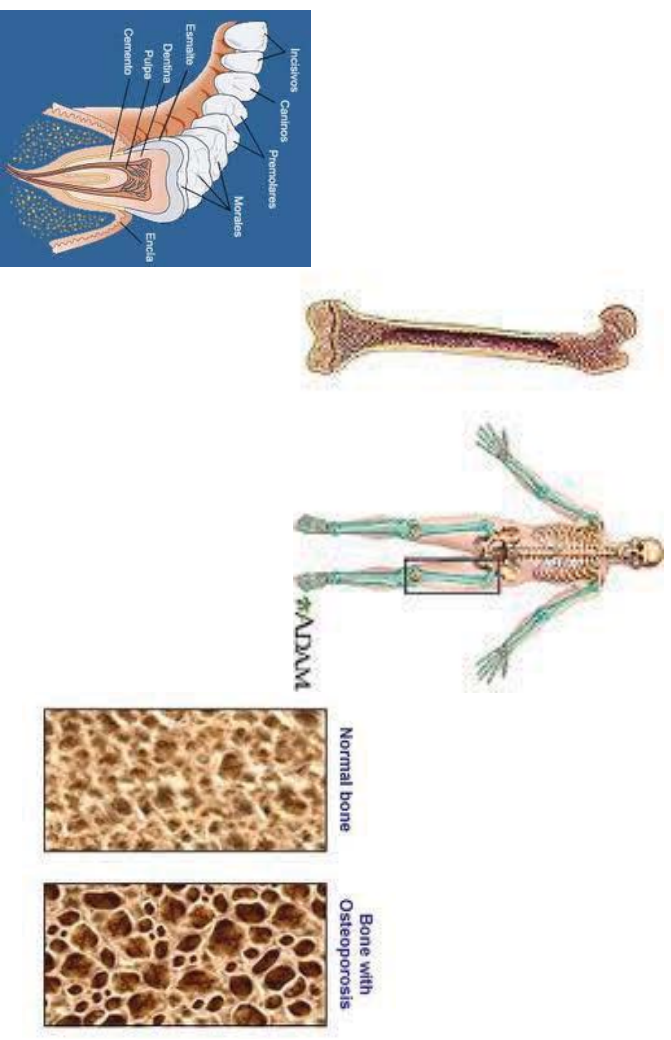




Dental materials and bone-replacements

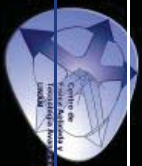


Bone: Synergistic combination of Hydroxyapatite (HAp) and collagen

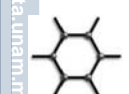


2D CRYSTALS:

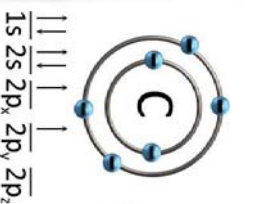
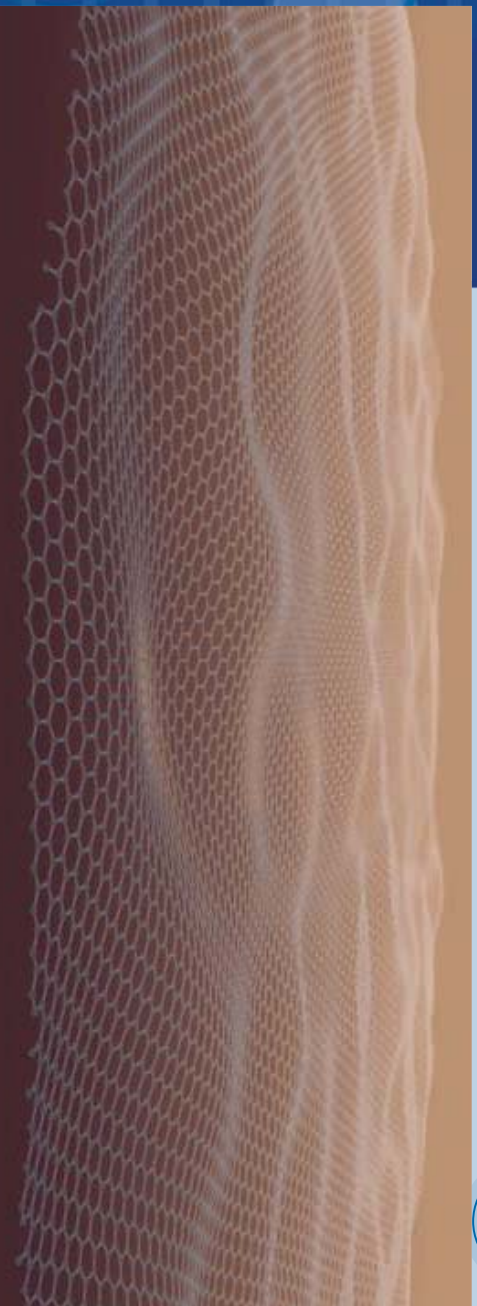
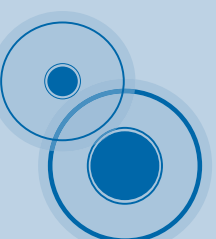
AN OLD DREAM COMES TRUE



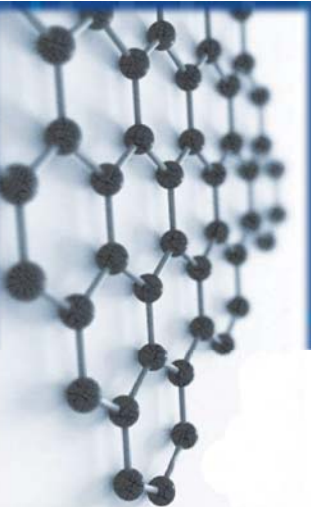
- ✧ 1940's: Landau y Peierls, 2D crystals are thermodynamically unstable.
- ✧ **2004: graphene and boron nitride 2D structures isolated**
- ✧ Graphene crystallites: stability thanks to curvature of sheets
- ✧ Great elastic energy, while diminishing thermal vibrations



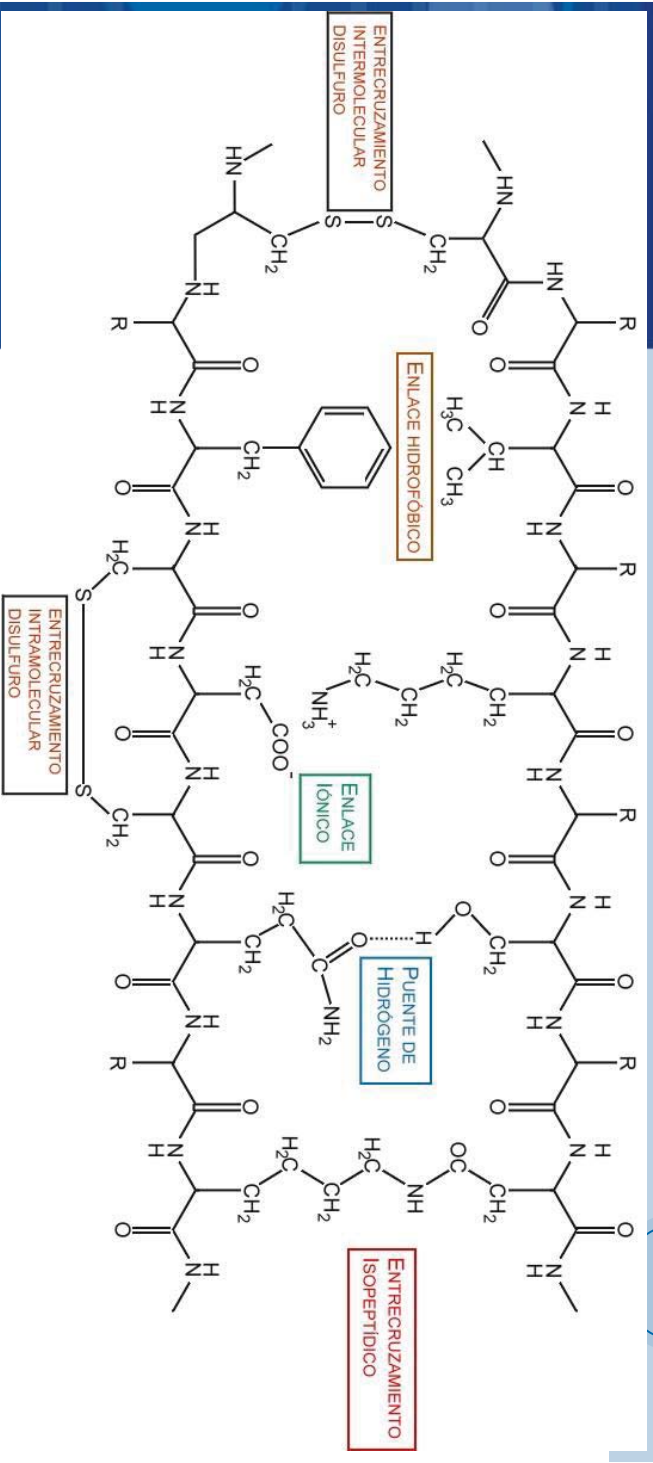
www.fata.unam.mx



Novel molecular materials

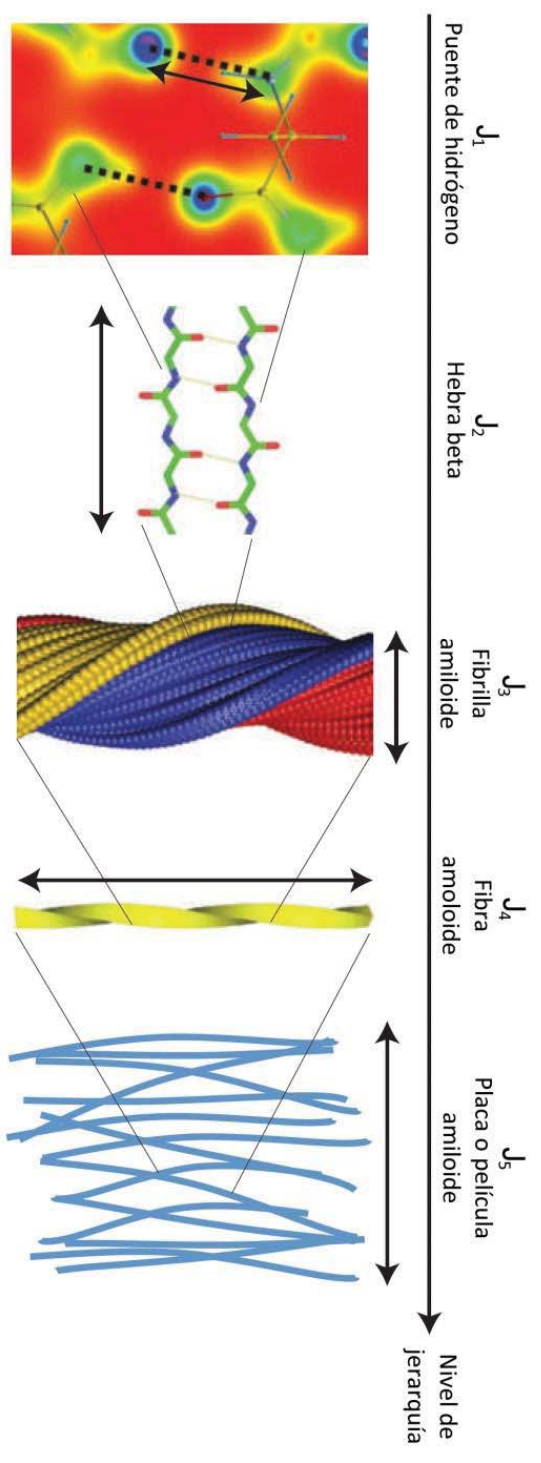
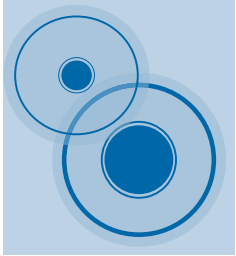


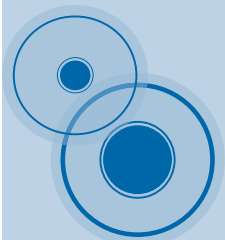
www.fata.unam.mx



Types of bonding possible in keratin

PROTEINS = SELF ASSEMBLING





MATERIAL

CODE

COLOR

- Graphite** GR ●
- Graphite oxide GA ●
- Graphene oxide GO ●
- Graphene GE ●
- Keratin KE ●
- Chitosan/Starch QA ●



GE...
 AUTOE...
 IND...
 WELLA...
 oros/
 pide
 zación
 col.

0

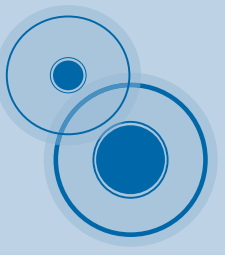
FENO

Hurr

ANTECHIMBIOS



Nanodiamond... from tequila!!



RANDOMSAMPLES

EDITED BY EDUARDO HERNANDEZ

PI From the Sky?



It's hard to believe that the mathematical constant pi can be found in the sky. But a group of researchers from the University of California, San Diego, has discovered a way to measure pi using satellite data. The researchers used data from the Global Positioning System (GPS) to measure the distance between a large number of points on the Earth's surface. They then calculated the ratio of the perimeter of the resulting shape to its area, which is pi. The researchers found that the ratio was very close to pi, within a few percent. This is a surprising result, as pi is a transcendental number and cannot be expressed as a simple fraction. The researchers believe that their method could be used to measure pi in other celestial bodies, such as planets and moons.

GROWTH OF DIAMOND FILMS FROM TEQUILA

J. Morales^{1,2}, L.M. Apátiga² and V.M. Castaño²

¹Facultad de Ciencias Físico Matemáticas, Universidad Autónoma de Nuevo León, Av. Universidad S/N, San Nicolás, Nuevo León, México 66450, México
²Centro de Física Aplicada y Tecnología Avanzada, Universidad Nacional Autónoma de México, Boulevard Juriquilla 3001, Santiago de Querétaro, Querétaro, México 76230, México

Received: February 19, 2009

Abstract: Diamond thin films were grown using Tequila as precursor by Pulsed Liquid Injection Chemical Vapor Deposition (PL-CVD) onto both silicon (100) and stainless steel 304 at 850 °C. The diamond films were characterized by Scanning Electron Microscopy (SEM) and Raman spectroscopy. The spherical crystallites (100 to 400 nm) show the characteristic 1332 cm⁻¹ Raman band of diamond.

Paradeus: Eat Your Heart Out

Adamantium was forged and the gods, so it goes. At Mexico, 1990, diamond was discovered in the state of Querétaro, in the town of Tequila. The discovery was made by a group of researchers from the Center for Applied and Technological Research in Materials and Manufacturing (CIATEM) at the National Autonomous University of Mexico (UNAM). The researchers found a small amount of diamond in a sample of tequila. This was a surprising discovery, as tequila is a natural product and diamond is a synthetic material. The researchers believe that the diamond was formed in the tequila during the distillation process. This discovery has led to the development of a new method for growing diamond films. The researchers used tequila as a precursor for the growth of diamond films. They found that the diamond films grown from tequila were of high quality and had a large surface area. This method could be used to grow diamond films on a variety of substrates, including silicon and stainless steel. The researchers believe that their method could be used to grow diamond films for a variety of applications, including electronics and optics.

GET ONLINE, LITTLE DOGGIES

It's hard to believe that the mathematical constant pi can be found in the sky. But a group of researchers from the University of California, San Diego, has discovered a way to measure pi using satellite data. The researchers used data from the Global Positioning System (GPS) to measure the distance between a large number of points on the Earth's surface. They then calculated the ratio of the perimeter of the resulting shape to its area, which is pi. The researchers found that the ratio was very close to pi, within a few percent. This is a surprising result, as pi is a transcendental number and cannot be expressed as a simple fraction. The researchers believe that their method could be used to measure pi in other celestial bodies, such as planets and moons.

Homer and the Eclipse

It's hard to believe that the mathematical constant pi can be found in the sky. But a group of researchers from the University of California, San Diego, has discovered a way to measure pi using satellite data. The researchers used data from the Global Positioning System (GPS) to measure the distance between a large number of points on the Earth's surface. They then calculated the ratio of the perimeter of the resulting shape to its area, which is pi. The researchers found that the ratio was very close to pi, within a few percent. This is a surprising result, as pi is a transcendental number and cannot be expressed as a simple fraction. The researchers believe that their method could be used to measure pi in other celestial bodies, such as planets and moons.



www.randomsamples.com SCIENCE VOL. 101 27 JUNE 2008

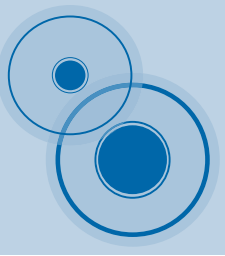
1701



www.fata.unam.mx



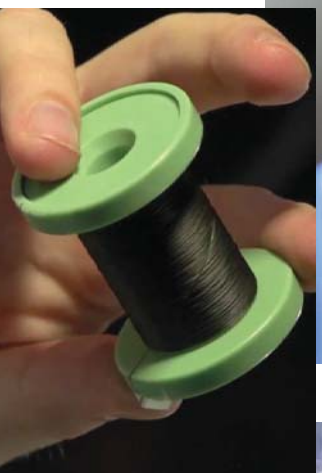
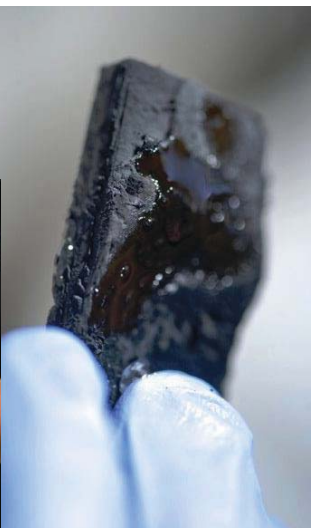
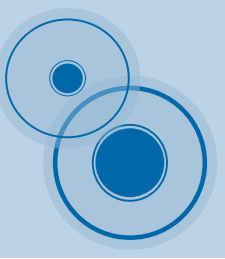
www.fata.unam.mx



www.fata.unam.mx



HIGH PERFORMANCE CARBON



UNIVERSITY OF
CAMBRIDGE

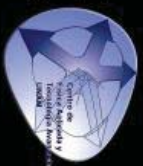
www.fata.unam.mx



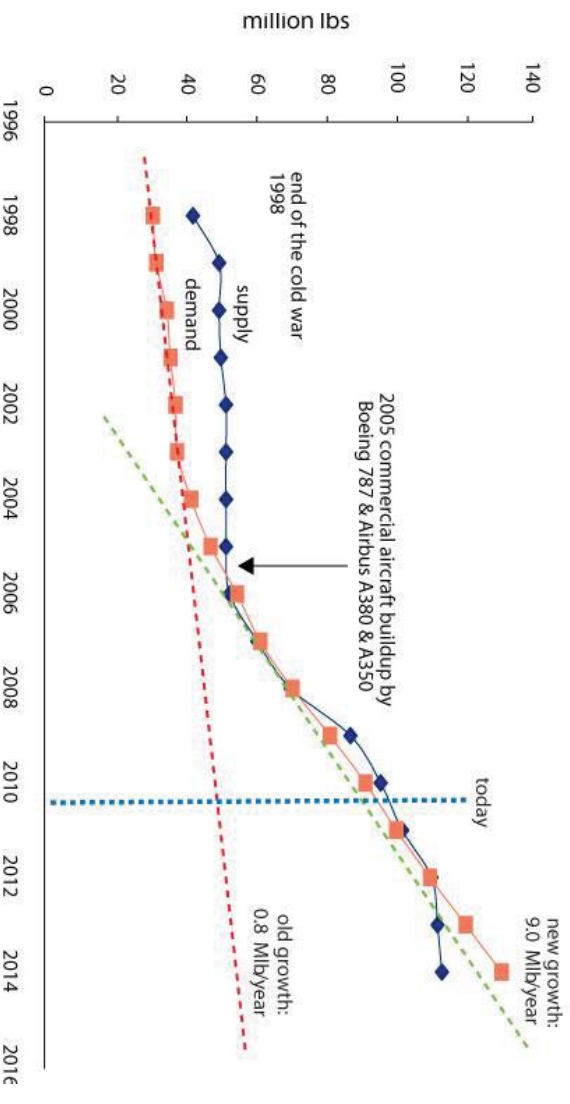
$$hf = \phi + E$$

$$hf = \phi + E$$

$$hf = \phi + E$$



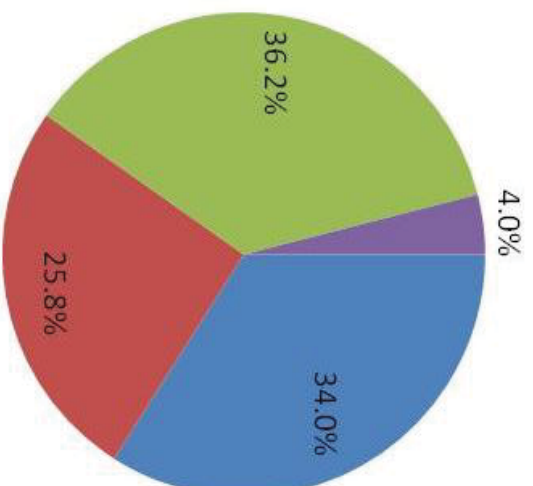
Industrial grade carbon fiber supply and demand



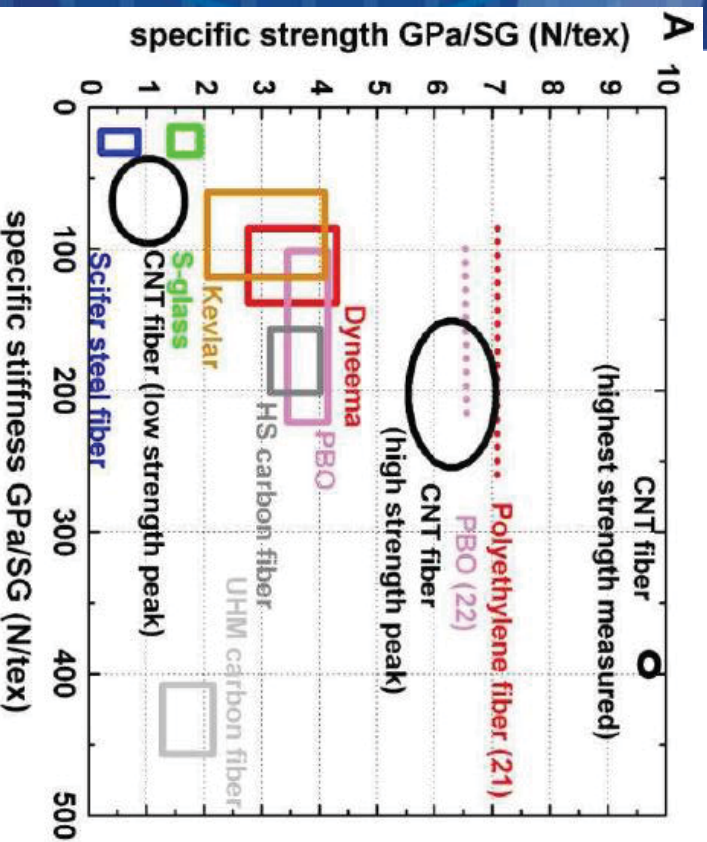
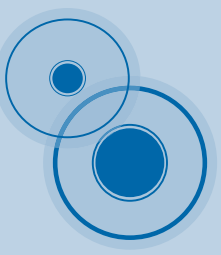
Rocky Mountain Institute © 2011. For more information see www.RMI.org/ReinventingFire.



Global Carbon Fiber Market by Geography, 2010

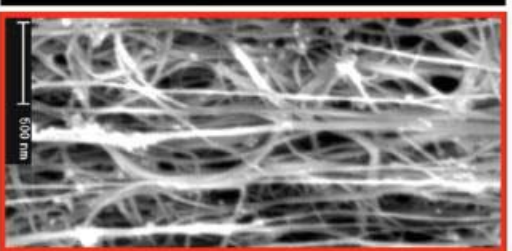
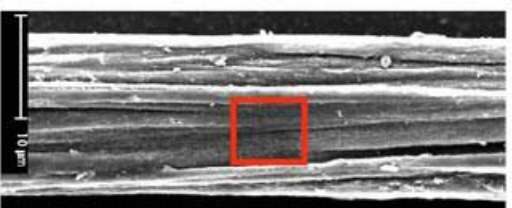
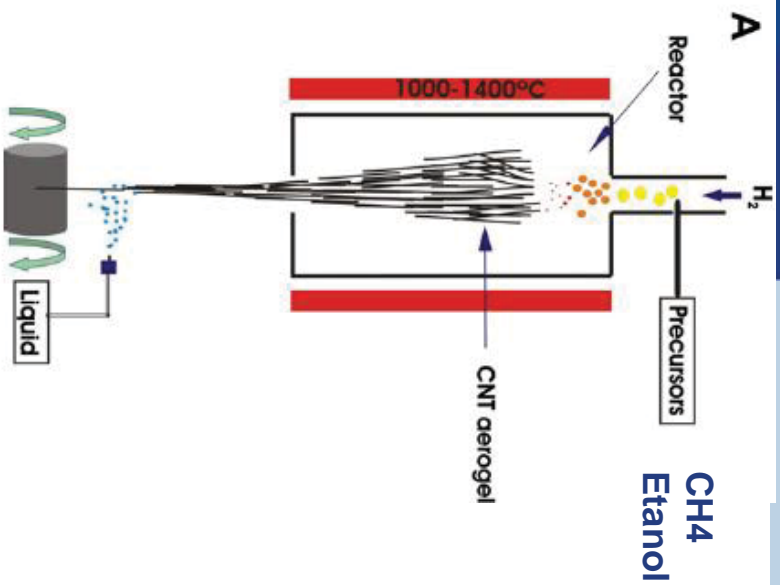


- North America
- Europe
- Asia Pacific
- ROW





CNTs from CVD



FIBRE AS PREPARED



Injection system

Reactor

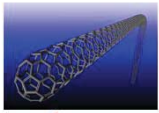
Gas exchange valve



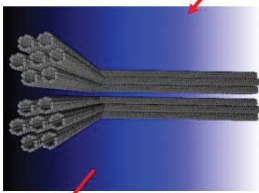
FIBRE AS PREPARED



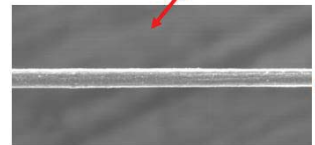
Fibre collection



nanotube



nanotubes bundles

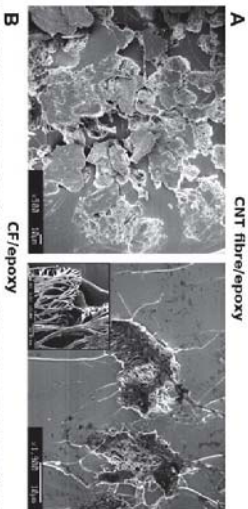
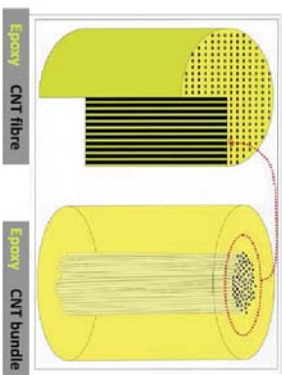


fibres

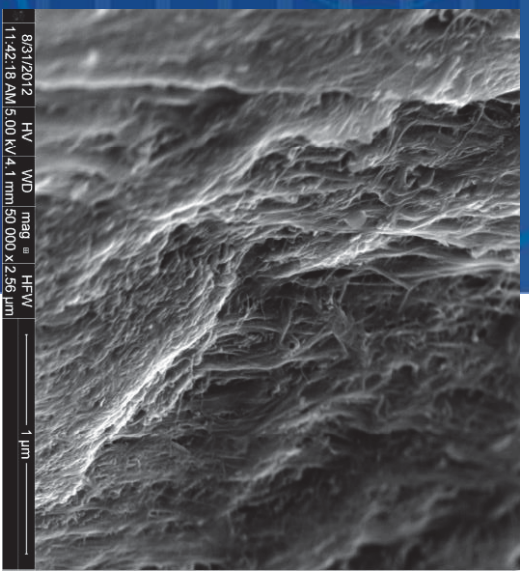
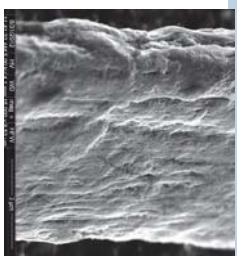
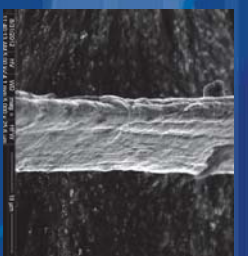
6 to 9 μm

Inside the reactor

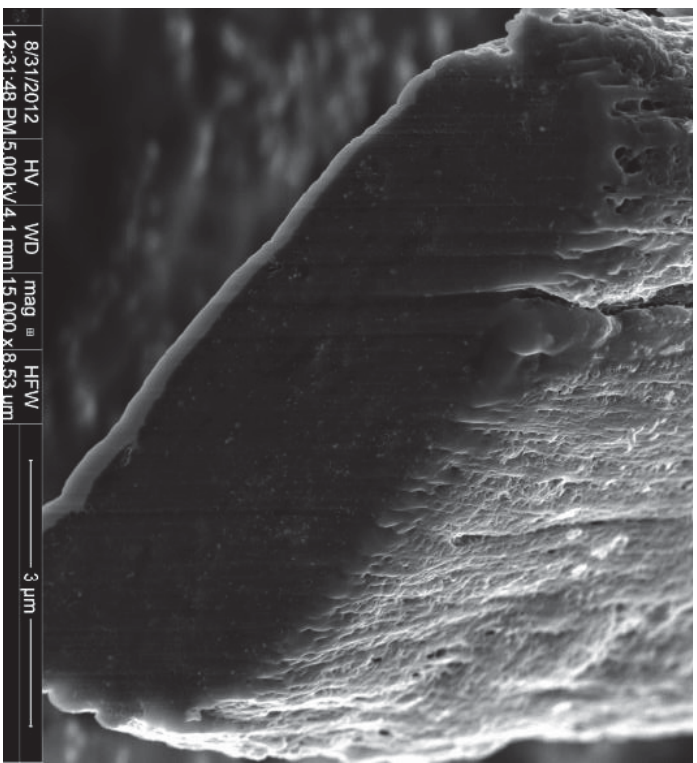
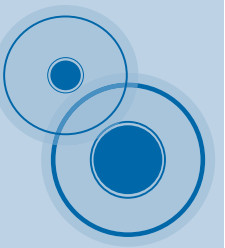
Outside the reactor



CNTs/resina epoxic resin fibers



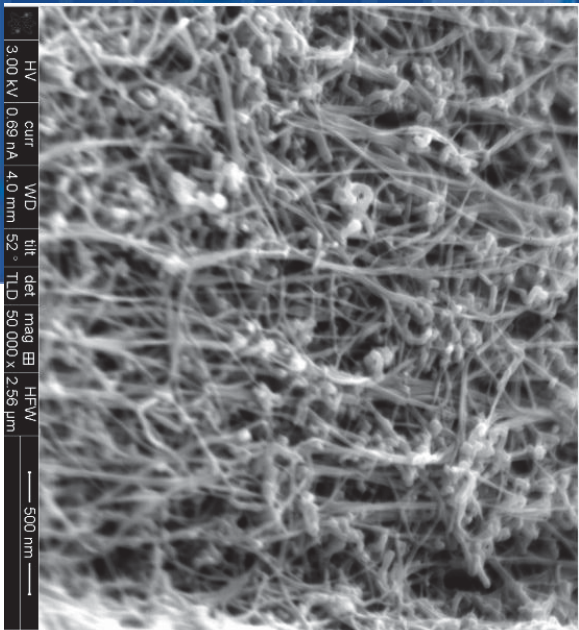
8/31/2012 HV WD mag HFW
11:42:18 AM 5.00 kV 4.1 mm 50 000 X 2.56 μm 1 μm



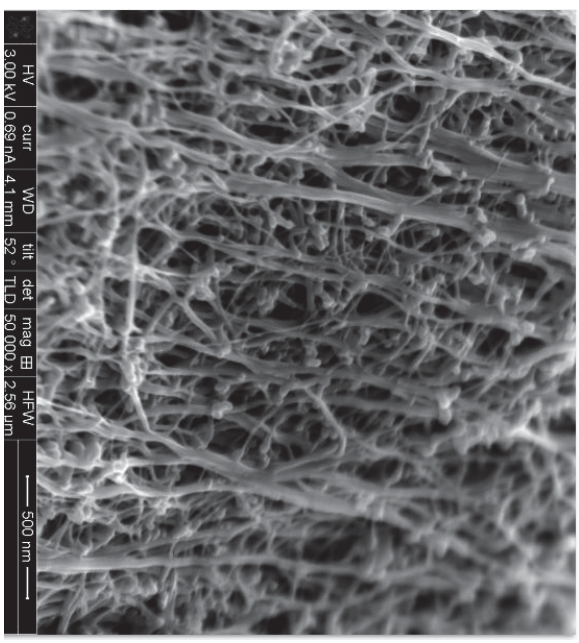
8/31/2012 HV WD mag HFW
12:31:48 PM 5.00 kV 4.1 mm 15 000 X 8.53 μm 3 μm



Without
interfacial
treatment



With
interfacial
treatment

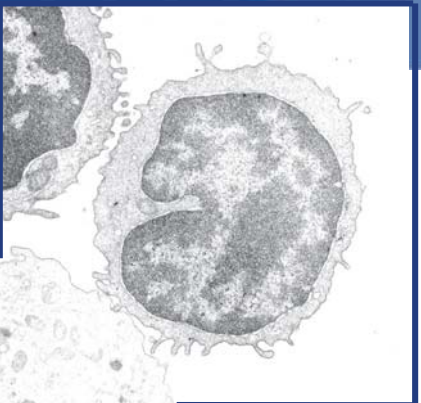


Modulus: **1296 CN/tex**
Tenacity: 24 CN/tex

Modulus: **3842 CN/tex**
Tenacity: **63 CN/tex**



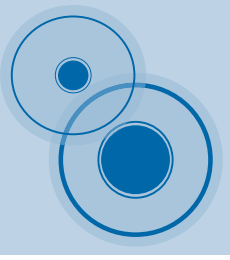
CONCLUSION:
**A Modern Vision of Advanced Materials
For Advanced Manufacturing**
Biology



Chemistry



Physics



Victor M. Castaño

Professor

vmcastano@ai.org.mx

meneses@unam.mx

www.victorcastano.net

Twitter: @VMCastano

Facebook:

victormanuel.castanomeneses