





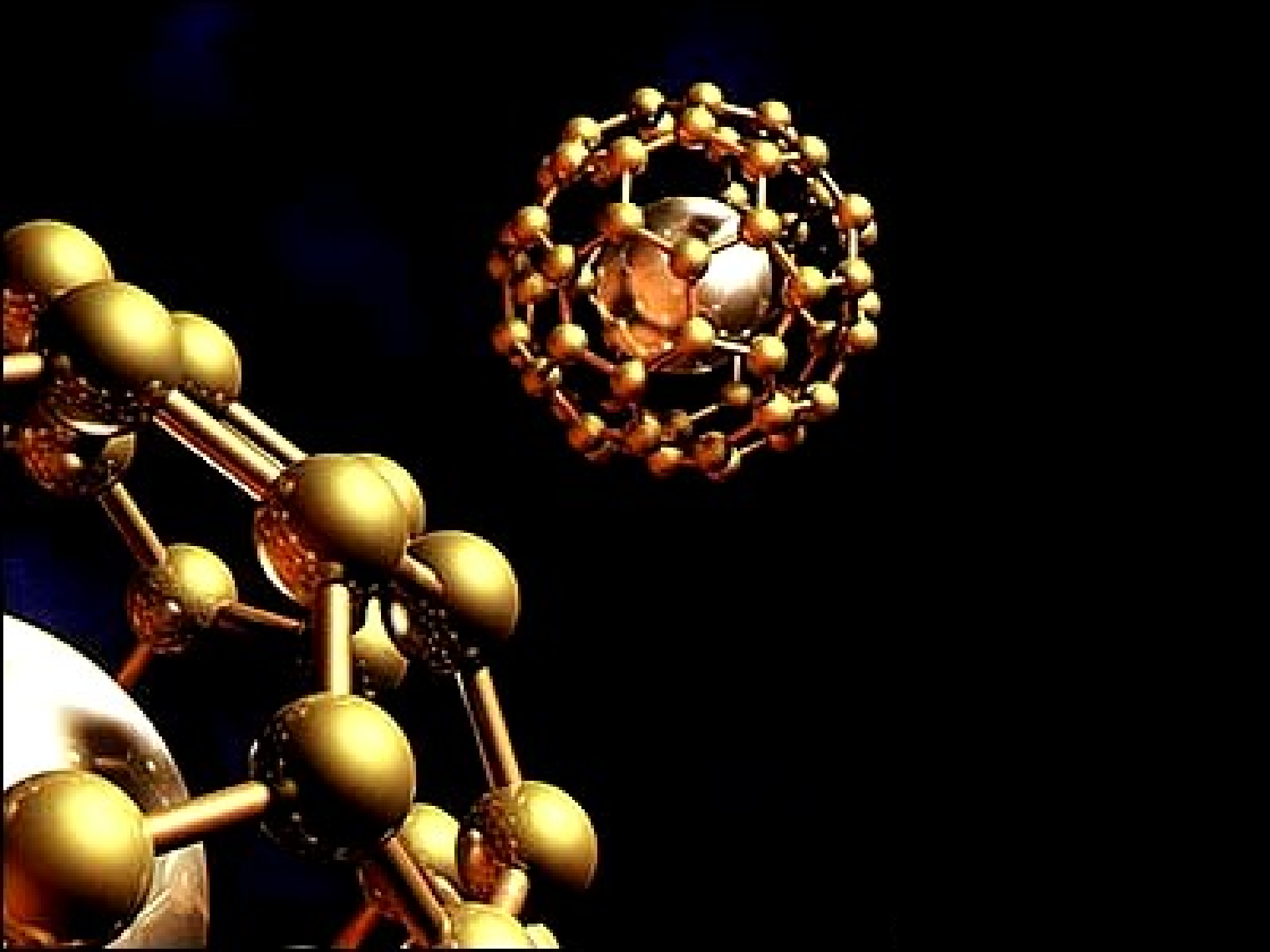
A partir da descoberta do Microscópio de  
Tunelamento de Campo ( 1985 )  
o homem instrumentalizou a nanociência,  
descobriu o nanocosmos e  
ingressou no universo nano.





# Nanotecnologi a



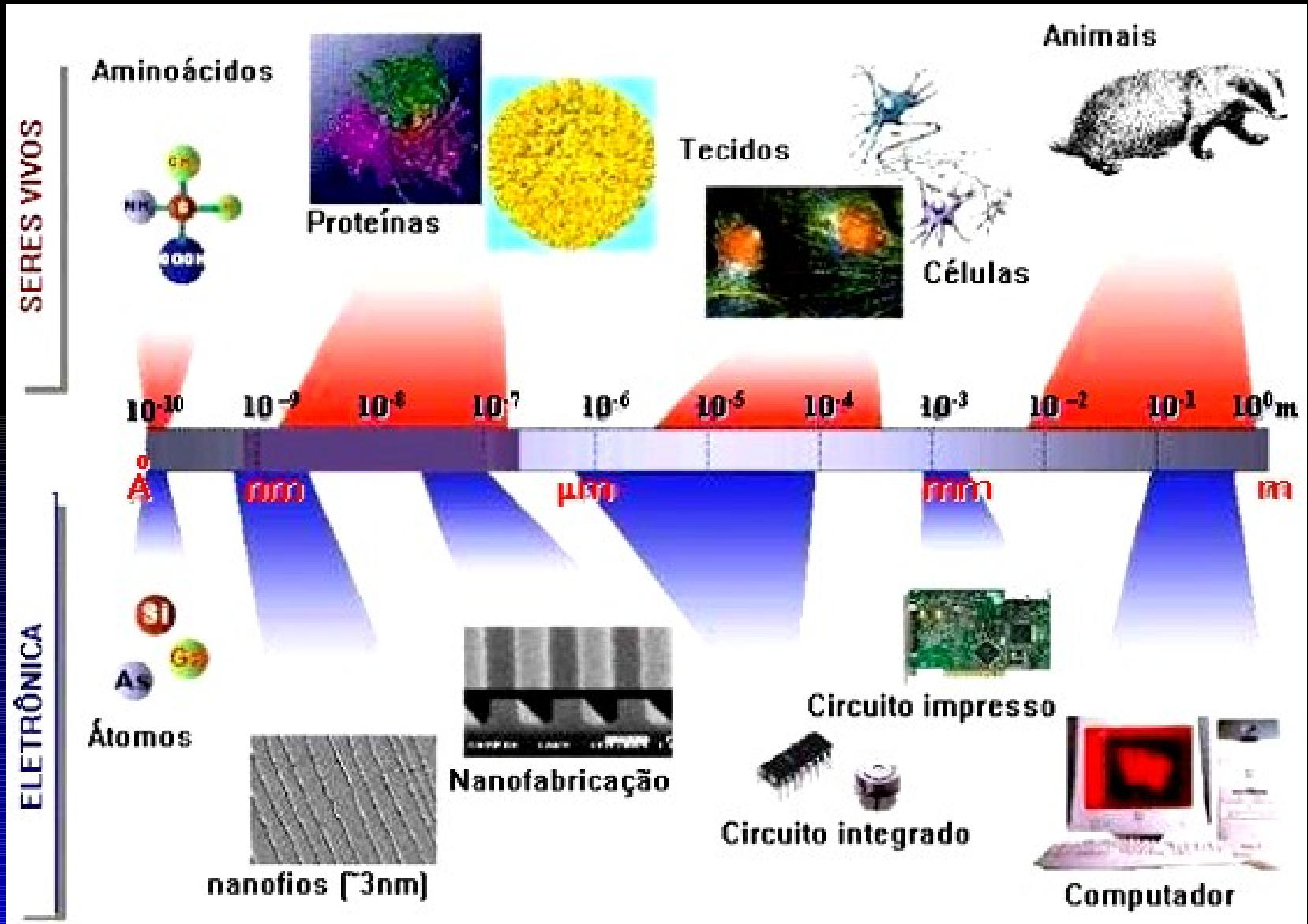




# Nanotecnologia

- A Nanotecnologia representa materiais e instrumentos construídos em escala do átomo e de moléculas.
- A nanotecnologia já está presente em vários campos da vida moderna.
- Em torno de 2014, os negócios mundiais com produtos nano-estruturados superará a casa dos
- US\$ 2,3 trilhões.

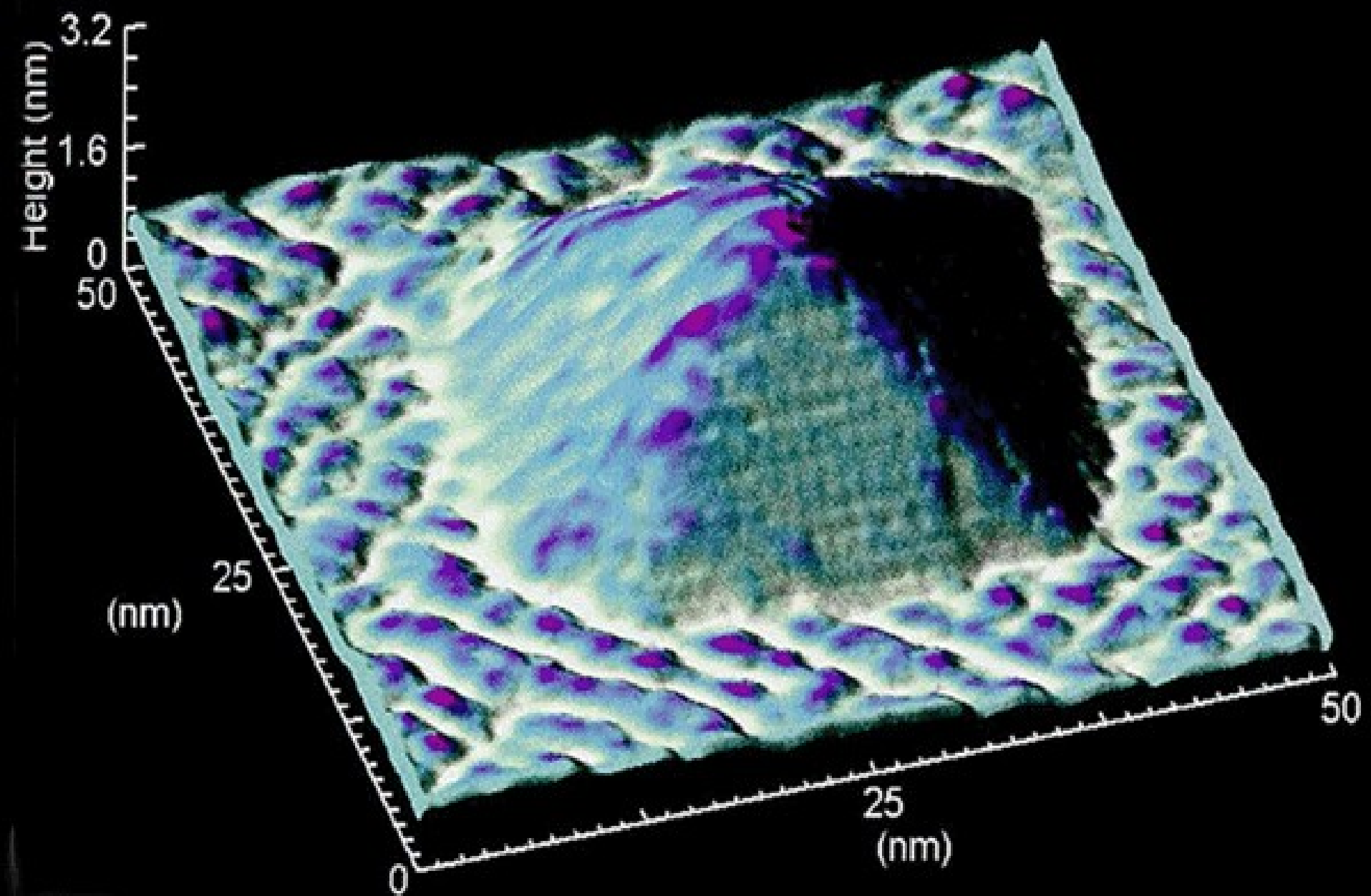
# Nanotecnologia



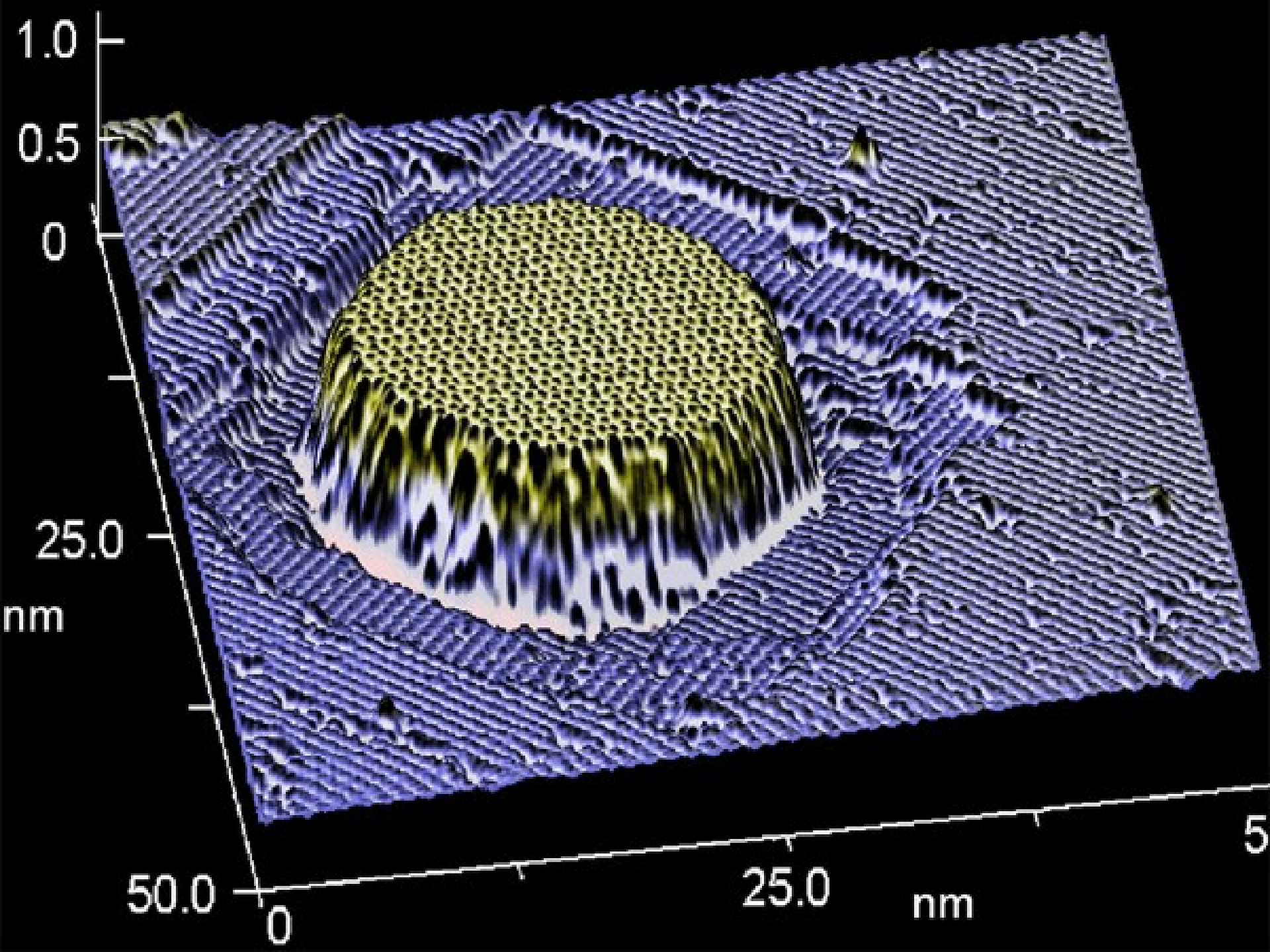
# MICROSCÓPIO DE TUNELAMENTO DE CAMPO











# A Nanotecnologia como Estratégia de Estado



National Science and Technology Council (NSTC)  
Committee on Technology  
The Interagency Working Group on Nanoscience,  
Engineering and Technology (IWGN)

## Nanotechnology

**Shaping the World Atom by Atom**

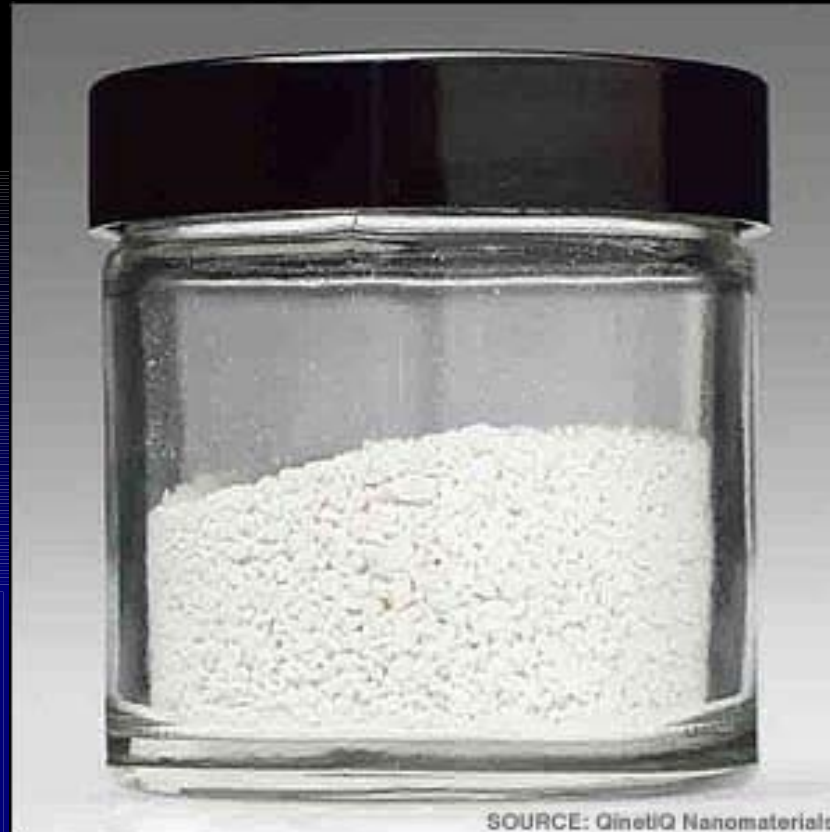
# A Nanotecnologia como Fator de Competitividade Global



**Vice Ministro de Assuntos Economicos Mr. Shih Yen-shiang (terceiro da esquerda) aperta o botão para marcar a inauguração do Logo de Identificação dos Produtos Nanotecnológicos de Taiwan. CNA Photo Dec. 20, 2005**

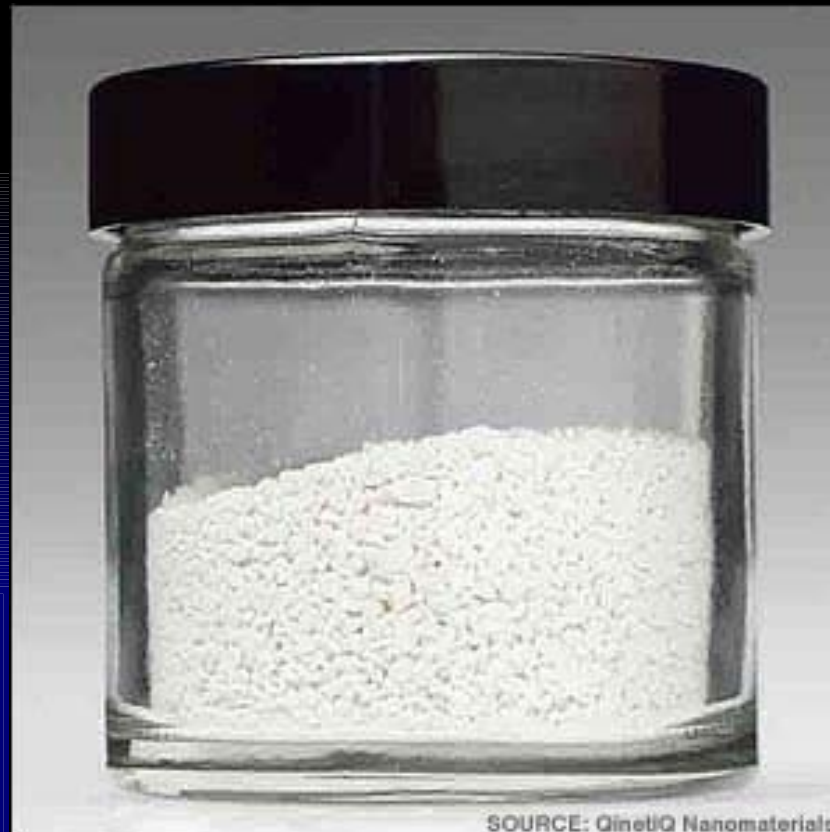


# NANOPARTÍCULAS



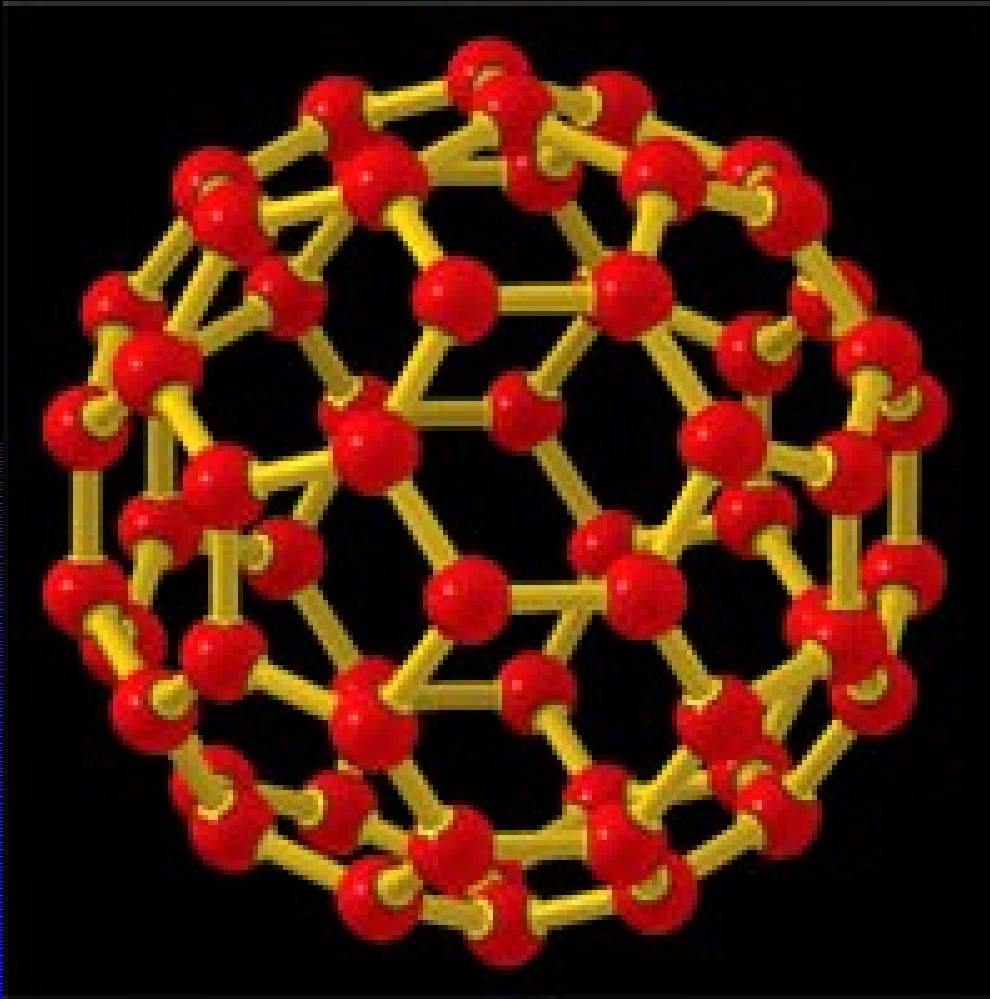
# NANOPARTÍCULAS

**Nesse recipiente estão somente 5 gramas de NANOPARTÍCULAS, o suficiente para distribuir para cada pessoa na Terra 3.000.000 delas.**



SOURCE: QinetiQ Nanomaterials

# Nanoballs

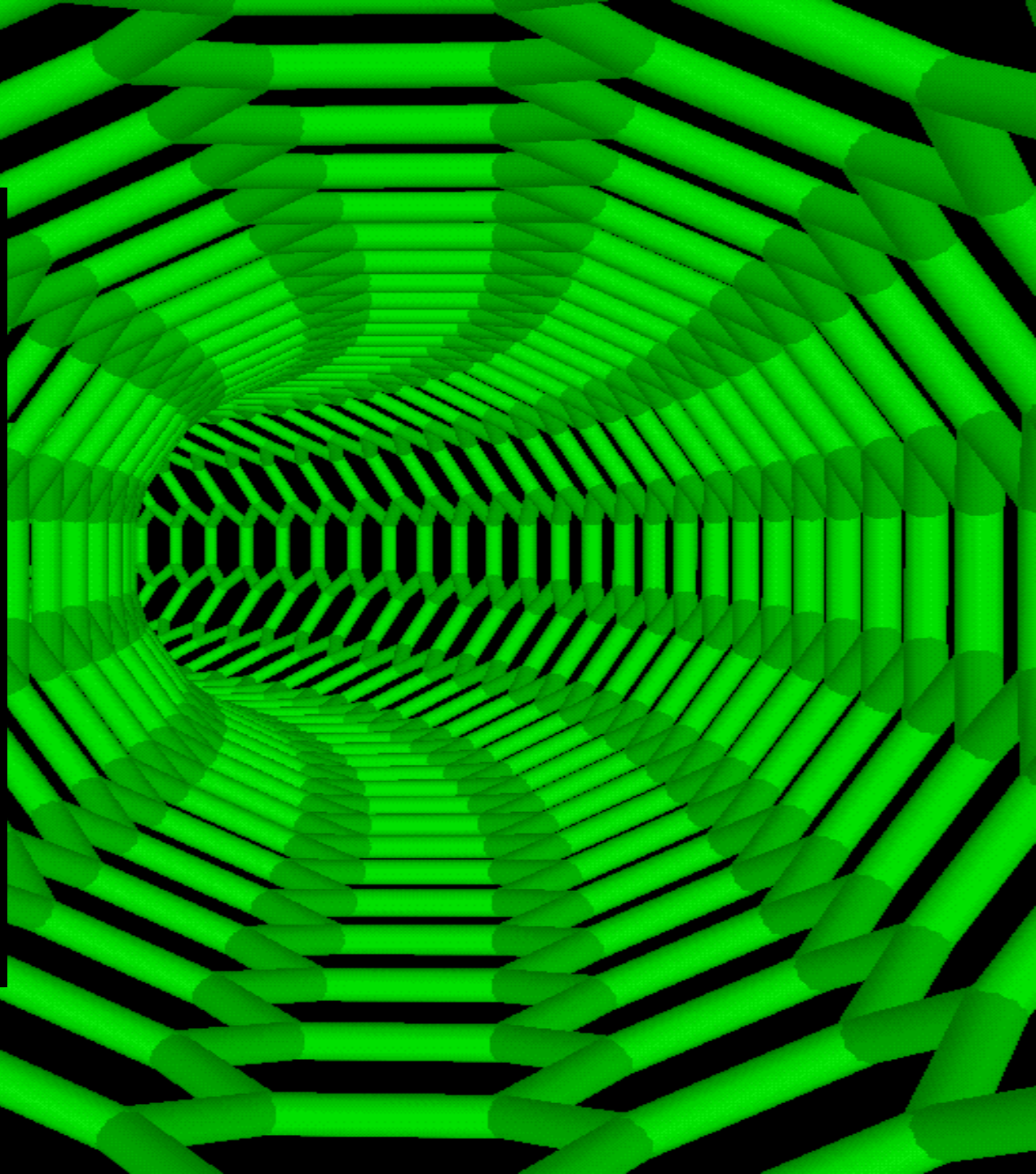


Com 60 átomos de Carbono, as **Nanoballs** podem encapsular átomos, moléculas, medicamentos e outros compostos moleculares.

Suas ínfimas dimensões permitem que sejam inseridas nos Núcleos Celulares.

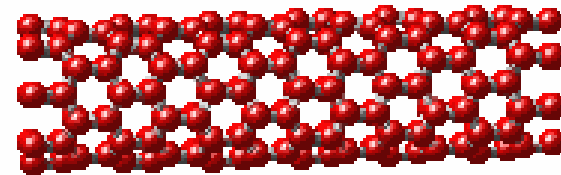


Os Nanotubos de carbono tem ligações atômicas tão fortes como o diamante, são flexíveis e podem ser trançados em forma de tecidos, são condutores, ou não, de eletricidade, ignoram condições extremas de calor ou de frio e ainda servem para encapsular elementos químicos ou medicamentos...



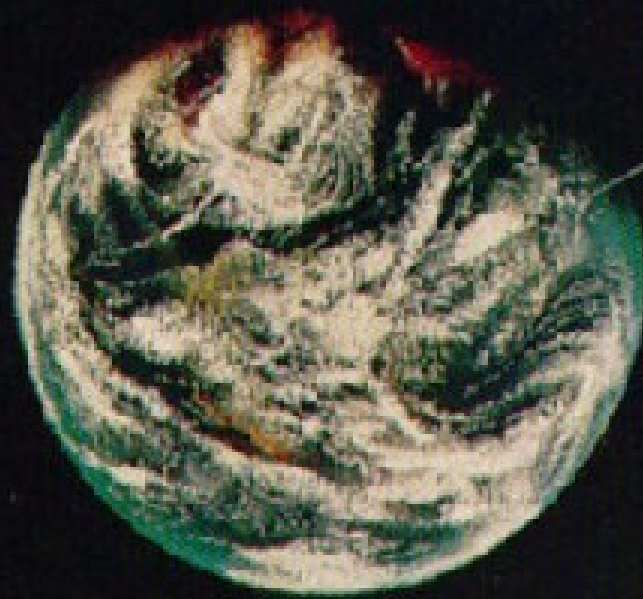
# Nanotubos de Carbono

**100.000 vezes mais fino que um fio de cabelo**



# Nanotubos de Carbono

Trançados em forma de fita, poderão içar  
Elevadores para Estações Orbitais ( NASA )



Somente em outra ocasião o Governo  
Norte Americano alocou tantos  
recursos num Programa Científico :  
O Projeto Apolo

Tom Gresham  
1991

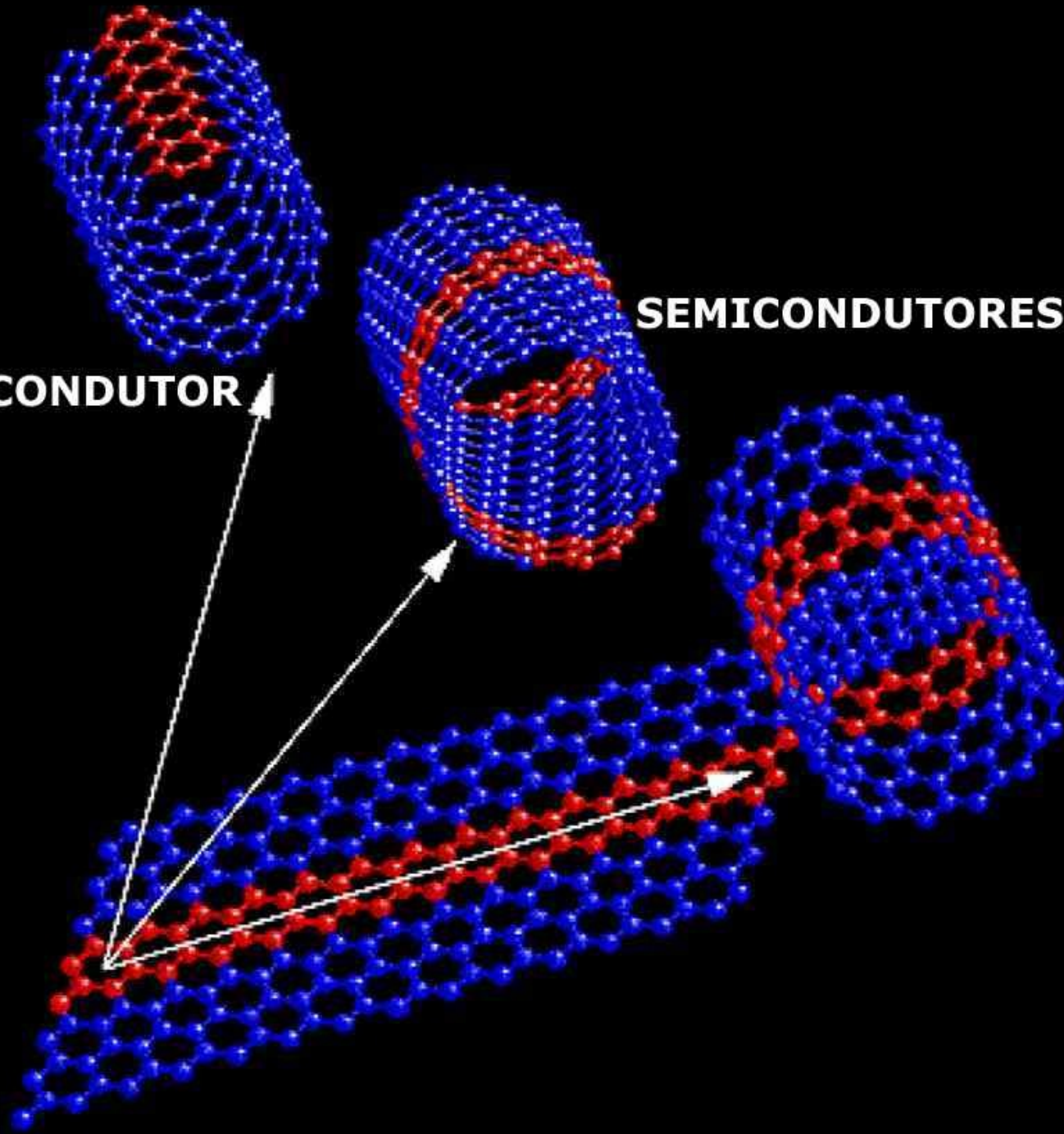


**CONDUTOR**

**SEMICONDUCTORES**

As características elétricas dos Nanotubos de Carbono variam de acordo com a forma pela qual a folha de grafite foi "enrolada" para formar o tubo. Se ela for enrolada sobre si mesma de modo a manter a linearidade da estrutura, o Nanotubo será um excelente condutor de eletricidade, com resistividade menor que a do cobre.

Mas se a folha sofrer uma ligeira torção antes de ser enrolada, o Nanotubo se comportará como um semicondutor.

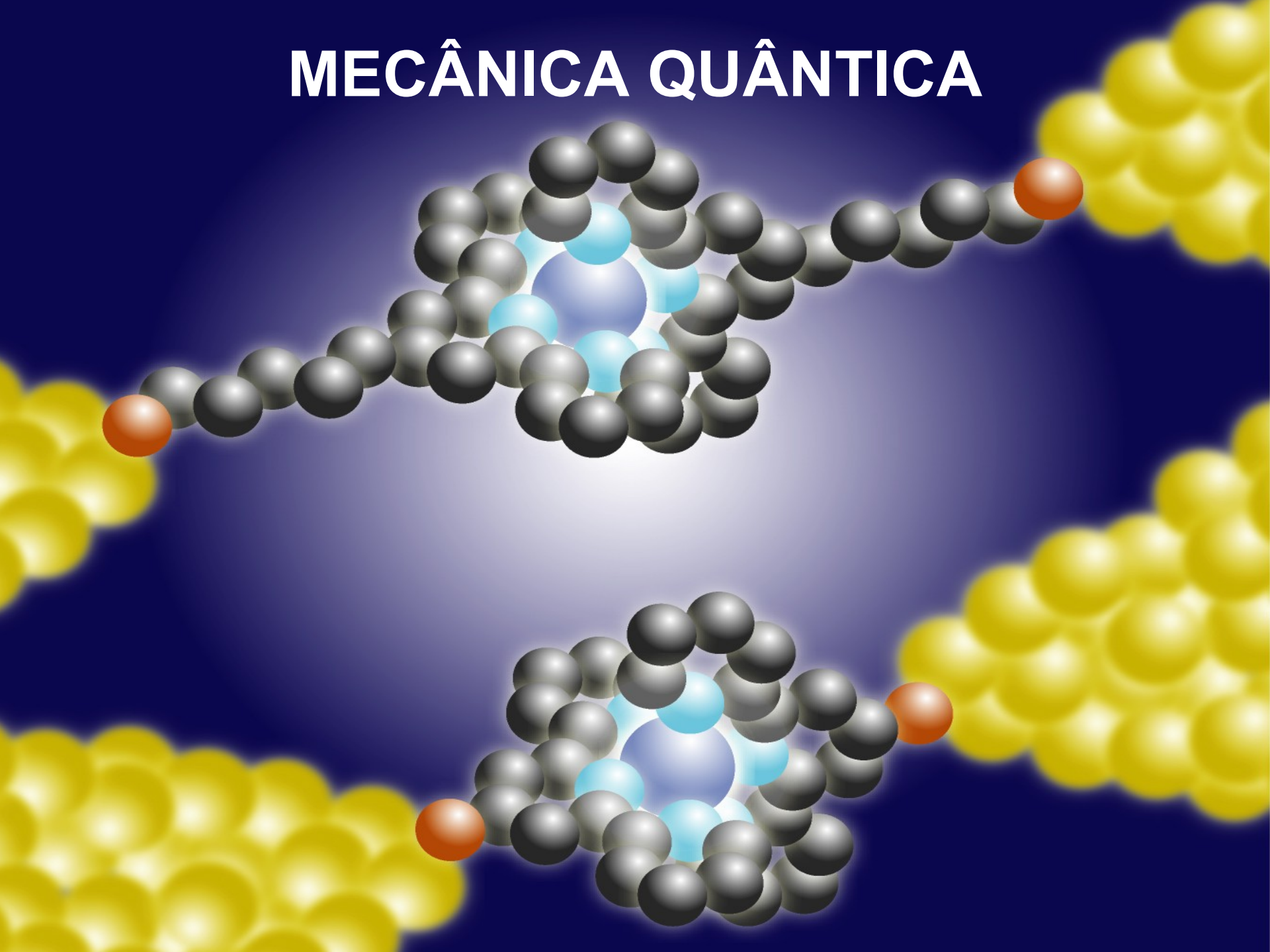


# LEIS NEWTONIANAS

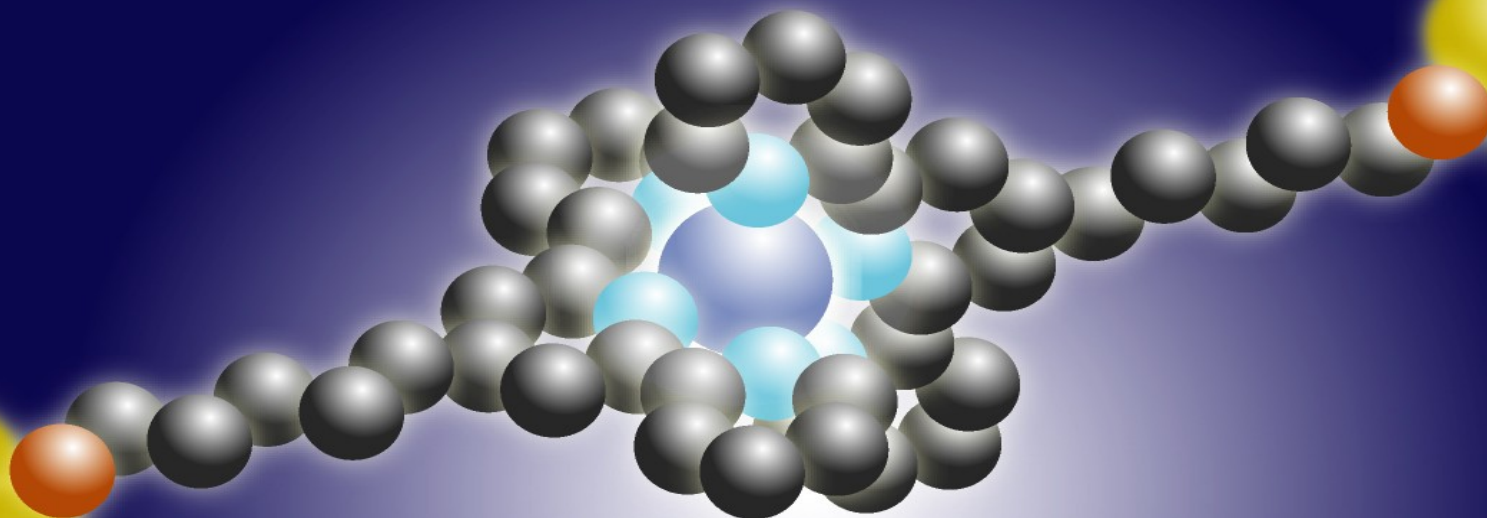


Sir Isaac Newton

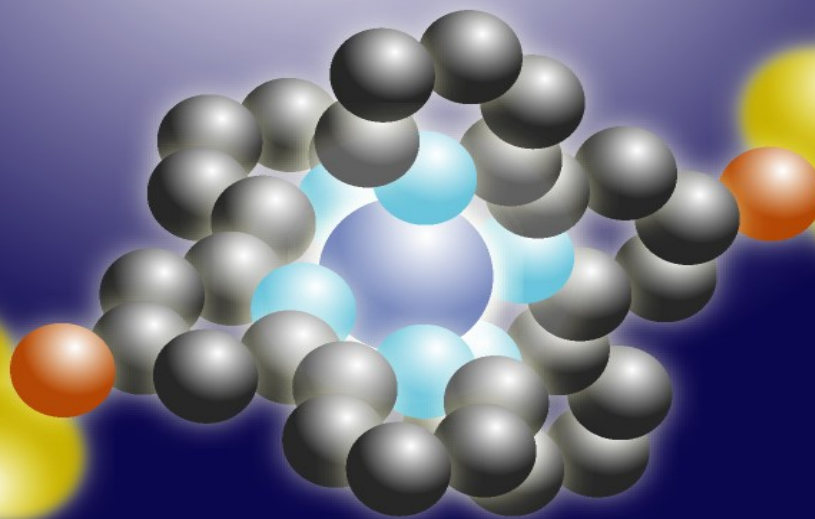
# MECÂNICA QUÂNTICA





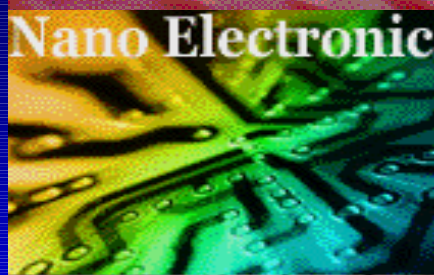
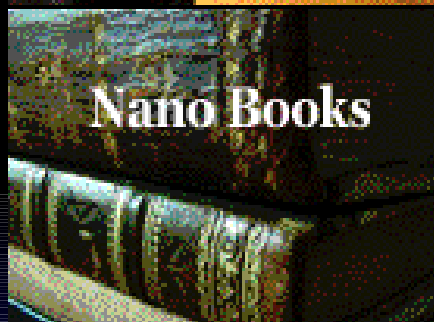


**Pesquisadores da Cornell  
University criaram um Transistor  
com único átomo.**



# Nano Business

# A NANOTECNOLOGIA OCUPA ESPAÇOS





What  
do Hewlett-Packard, IBM, General  
Electric, DuPont and Intel have in  
common?  
All are investing in nanotechnology.



# A Nanotecnologia no Mercado Automotivo



**A pintura dos novos Mercedes Benz são resistentes à riscos e arranhões graças às ligações cruzadas de alta densidade e nanopartículas de cerâmica.**



## **A AUDI também aposta nas Soluções Nanotecnológicas**

***“The potential is enormous. Nanotechnology has something visionary about it, it fires creativity in a way that will benefit car manufacturing in the future.”***

**Dr. Hans Bauer**

**Physicist in Charge of the Nanotechnology Program at Audi.**

St. herb™

**NANO**  
**BREAST SERUM**  
Nanotechnology Product  
INSTANT BREAST FIRMNESS  
Enriched with vitamins

ST. HERB AND PHILIP WOLFF, LLC 11290 LINDEN BOUL  
PORTLAND, OREGON 97206-5500 TEL: 503.251.5111  
WWW.STHERBANDPHILIPWOLFF.COM



**NANO BREAST CREAM** - Product features instant breast firmness & enhancement, Increases the breast size from 1 to 3 cup size Nanosomes expands the cellular substructure of the breast cells Promotes development of the lobules and alveoli of the breasts, Nanosomes tone and elasticity the breast tissue, Protection from free radicals, Stimulates glandular tissue growth, Stimulates the development of the mammary tissues, Lengthen the milk ducts, Stimulate and expand fat tissues, Develop stromal tissues of the breast, Stimulating blood to better nourish skin, Breast shapes size with more visible cleavage.

# PRODUTOS DISPONÍVEIS NO MERCADO INTERNACIONAL

The New York Times

## Tennis Racket

Carbon nanotubes help stiffen the frame.

## Foot warmers

With nanoscale air pockets.

The New York Times

## Spray Vitamins

"Nanodroplets" for better absorption.

## Skin Cream

Contains "nano-encapsulated" compounds.

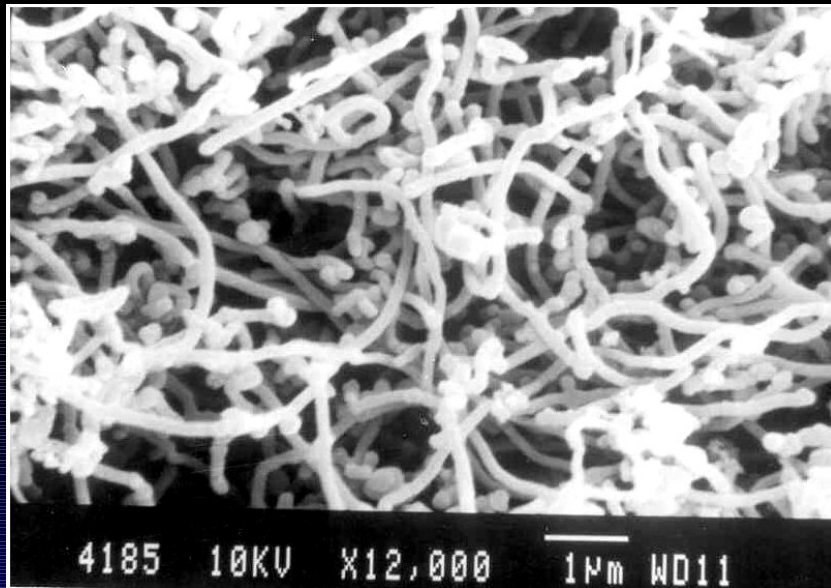
## Kitchen Paint

Nanoscale additives for durability.

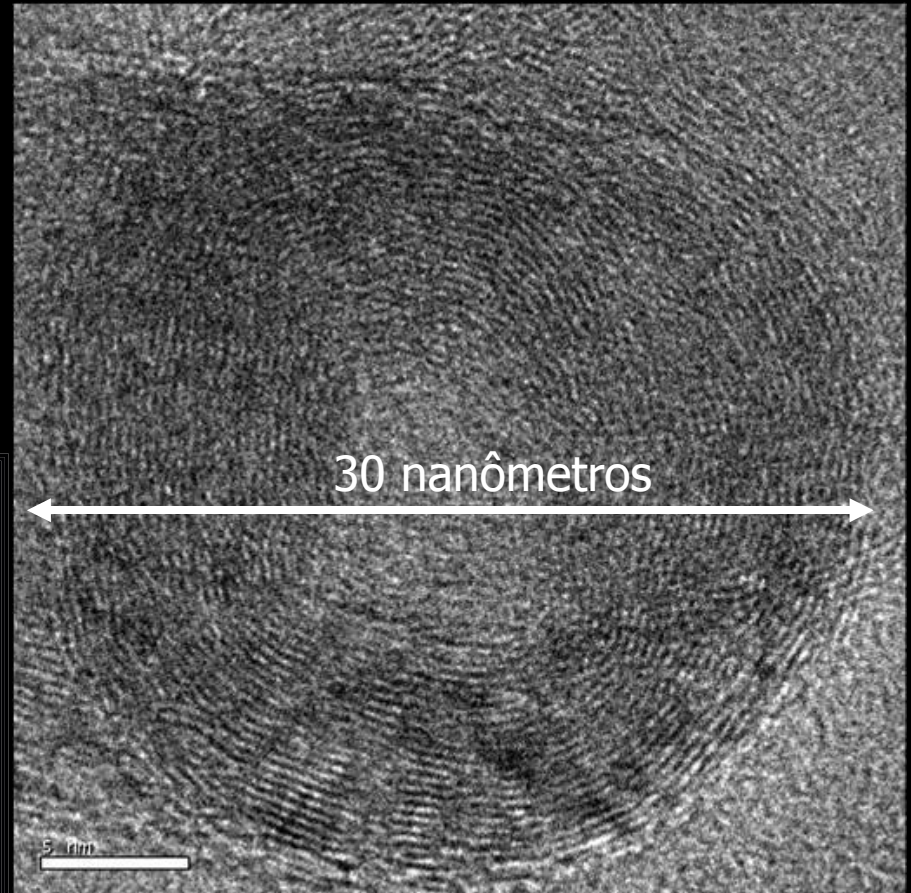




# A Nanotecnologia no Mundo Têxtil

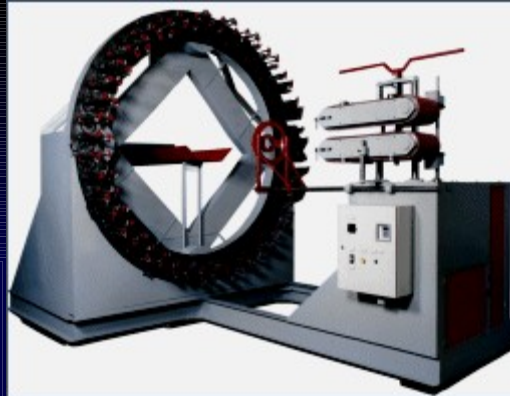
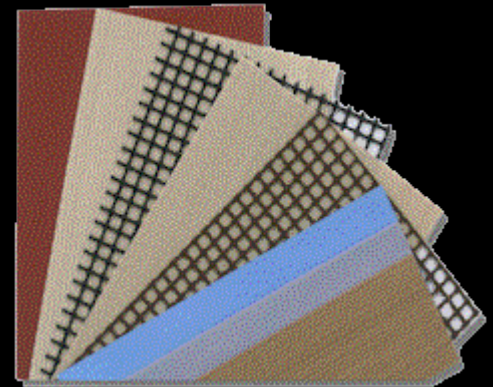


**Nanofibras de Carbono**



**Nanofios de Carbono (HRTEM)**

# A Nanotecnologia no Mundo Têxtil



# A Nanotecnologia no Mundo Têxtil



**Water and Oil repellency** outside.  
**Wicking properties** inside.  
**Anti-bacterial.**  
**Anti-UV and Warm-keep.**





# A Nanotecnologia chegará ao Mundo Fashion da mesma forma como já chegou nos cosméticos





# NANO TECIDOS



# NANO TECIDOS



# NANO TECIDOS

**Nano Bag** is an infant car seat and stroller accessory that provides warmth for your baby while traveling and outdoors. Nano Bag is a bunting bag that will keep your baby happy, cozy and most importantly dry, because Nano Bag is **the only water repellent bag in the market** to transport baby in and out of the car.



**\$ 34.95**



# NANO SELANTES PARA TECIDOS



'Percenta Nano Textile & Leather Sealant'  
is dry cleaning resistant.





# OS NANOTECIDOS NO MERCADO INTERNACIONAL

## As Novas Empresas Nano I



**Nano-Tex** é uma empresa de Emeryville, California, USA.

Seu negócio é INOVAR TECIDOS através da NANOTECNOLOGIA.

Sua proposta é agregar características de  
**PERFORMANCE SUPERIORES** aos tecidos do dia-a-dia.

Centro de Pesquisas : Emeryville (100%)

# OS NANOTECIDOS NO MERCADO INTERNACIONAL



**Nano-Tex não vende tecidos.**

**Comercializa somente a tecnologia de  
fabricação das fibras nanoestruturadas.**

# OS NANOTECIDOS NO MERCADO INTERNACIONAL

## Posicionamento Estratégico Global



8 anos

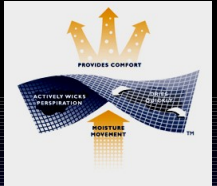
# OS NANOTECIDOS NO MERCADO INTERNACIONAL



## PRODUTOS INCORPORAM NANOTECNOLOGIAS :



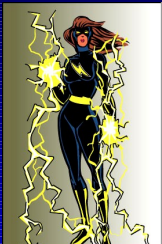
**Resists Spills** – Spill resistant fabric enhancement for many types of fibers (cotton, synthetics, wool, silk, rayon, polypropylene) that repels a range of liquids (e.g. beverages, salad dressings, etc.)



**Coollest Comfort** – Quick-absorbing fabric enhancement providing superior wicking properties, which pulls perspiration away from the body and dries it quickly to keep the body cool and comfortable.



**Repels and Releases Stains** - In this dual-acting treatment, the first line of defense is Nano-Tex's superior repellency technology which causes liquids to bead up and roll off the fabric. For stains that get ground into the fabric, Nano-Tex's patented release technology frees stains from fibers during a normal wash cycle.



**Resists Static** - The first permanent anti-static treatment reduces static cling and repels statically-attractive substances - such as dog hair, lint and dust - to improve the overall appearance and comfort of garments.



# OS NANOTECIDOS NO MERCADO INTERNACIONAL



**What you don't see makes all the difference.™**

Nano-Tex's revolutionary technology fundamentally transforms fabric at the nano-level to dramatically improve your favorite everyday clothing.

**Are you ready for what's next?**



## WHERE TO BUY

- **Apparel**
- **Uniforms**

## FAQS

- **Read FAQS**  
Learn more about Nano-Tex™ Coolest Comfort Fabric

## DOWNLOAD

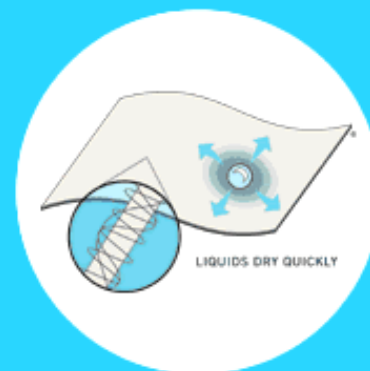
- **Product Info**  
Learn more about Nano-Tex™ Coolest Comfort Fabric (.pdf)

## COOLEST COMFORT

The Alarm goes off and it's the beginning of another day. A bus ride, a presentation, a walk for lunch, and an evening workout are still ahead of you. You just smile.

Whether you're inside or outside, working or playing, you'll know that NANO-TEX™ Coolest Comfort fabric will help you look and feel cool all day long. It offers advanced moisture wicking without compromising softness or breathability.

With NANO-TEX Fabric, you'll be sure to keep your cool. You'll stay cool and comfortable-regardless of the day's activities. Experience the breakthrough and be ready for whatever's next.



## CHARACTERISTICS

### COOLNESS

pulls moisture away from skin to evaporate fast

### COMFORT

retains natural softness for maximum comfort

### BREATHABILITY

allows fabric to breathe naturally

### DURABILITY

maximizes performance over time

# OS NANOTECIDOS NO MERCADO INTERNACIONAL



## RESISTS STATIC

The kids got a snow day, but you sure didn't. You'll be crisscrossing downtown going from one meeting to the next. It'll be cold and hectic, but at least you'll be comfortable.

You've got clothes made with NANO-TEX™ Resists Static fabric, which helps you look and feel your best, no matter how much electricity is in the air. Your clothes won't cling to you and fuzz won't cling to your clothes, so you can do winter in style.

With NANO-TEX™ Fabric, you can shake off the weather as you shake off lint. Experience the breakthrough and get ready for whatever's next.



[VIEW DEMO](#)

• **Demonstration Video** (.mpg 51Mb)

[DOWNLOAD](#)

• **Product Info**  
Learn more about Nano-Tex™ Resists Static (.pdf)



[CHARACTERISTICS](#)

### STATIC RESISTANCE

neutralizes static charges to eliminate cling

### DURABILITY

maximizes performance over time

### COMFORT

retains natural softness for maximum comfort

### BREATHABILITY

allows fabric to breathe naturally

# OS NANOTECIDOS NO MERCADO INTERNACIONAL

## REPELS & RELEASES STAINS

Sunday brunch is over, and your nephew has just invited you to play a game of touch football. There's no time to change, but that won't stop you.

Your pants are made with NANO-TEX™ fabric that repels and releases stains, so you're protected on defense and offense. Spill resistance keeps stains from soaking in, while stain release allows them to easily come clean. And the best part is that you don't have to sacrifice any comfort to get this peace of mind.

With NANO-TEX™ fabric, your clothes fit your lifestyle, not the other way around. Experience the breakthrough and be ready for whatever's next.



### CHARACTERISTICS

#### SPILL RESISTANCE

allows spills to wipe off easily

#### STAIN REMOVAL

allows stains to wash out easily

#### COMFORT

retains natural softness for maximum comfort

#### DURABILITY

maximizes performance over time

### DOWNLOAD

#### Product Info

Learn more about  
Nano-Tex™ Repels &  
Releases Stains (.pdf)

# OS NANOTECIDOS NO MERCADO INTERNACIONAL



## WHERE TO BUY

- **Apparel**
- **Interior Furnishings**
- **Uniforms**

## FAQS

### ▪ **Read FAQs**

Learn more about Nano-Tex™ Resists Spills Fabric

## DOWNLOAD

### ▪ **Product Info**

Learn more about Nano-Tex™ Resists Spills Fabric (.pdf)

## RESISTS SPILLS

The waiter just spilled an iced latte in your lap, but you don't mind. You're wearing pants made with NANO-TEX™ spill-resistant fabric, so the coffee just beads up and rolls right off.

Now, this beats those conventional fabric treatments we've all seen before. That's because Nano-Tex builds spill resistance into the very fibers of the fabric, and this keeps the pants comfortable, soft, and breathable—just as they should be.

With NANO-TEX Fabric, you're looking good and feeling good. Complications roll away like water off a duck's back, and you're ready for whatever's next.



## CHARACTERISTICS

### **SPILL RESISTANCE**

allows spills to wipe off easily

### **DURABILITY**

maximizes performance over time

### **COMFORT**

retains natural softness for maximum comfort

### **BREATHABILITY**

allows fabric to breathe naturally



# OS NANOTECIDOS NO MERCADO INTERNACIONAL



## PRODUTOS E MERCADOS

Calças para homens, mulheres, idosos e crianças,  
roupas esportivas, uniformes, roupas de lazer e de trabalho.  
Está também presente em produtos para casa, mesa e banho.  
Em tecidos especiais, está em assentos de estádios e ginásios esportivos.

## Pontos de venda :



**Brooks Brothers**  
**DAMAT & Tween**  
**GAP , GapKids**  
**Gary's of Newport**  
**La Redoute , Land's End**  
**Lee , NEXT**  
**Nordstrom , Travelsmith**

# OS NANOTECIDOS NO MERCADO INTERNACIONAL

## As Novas Empresas Nano II



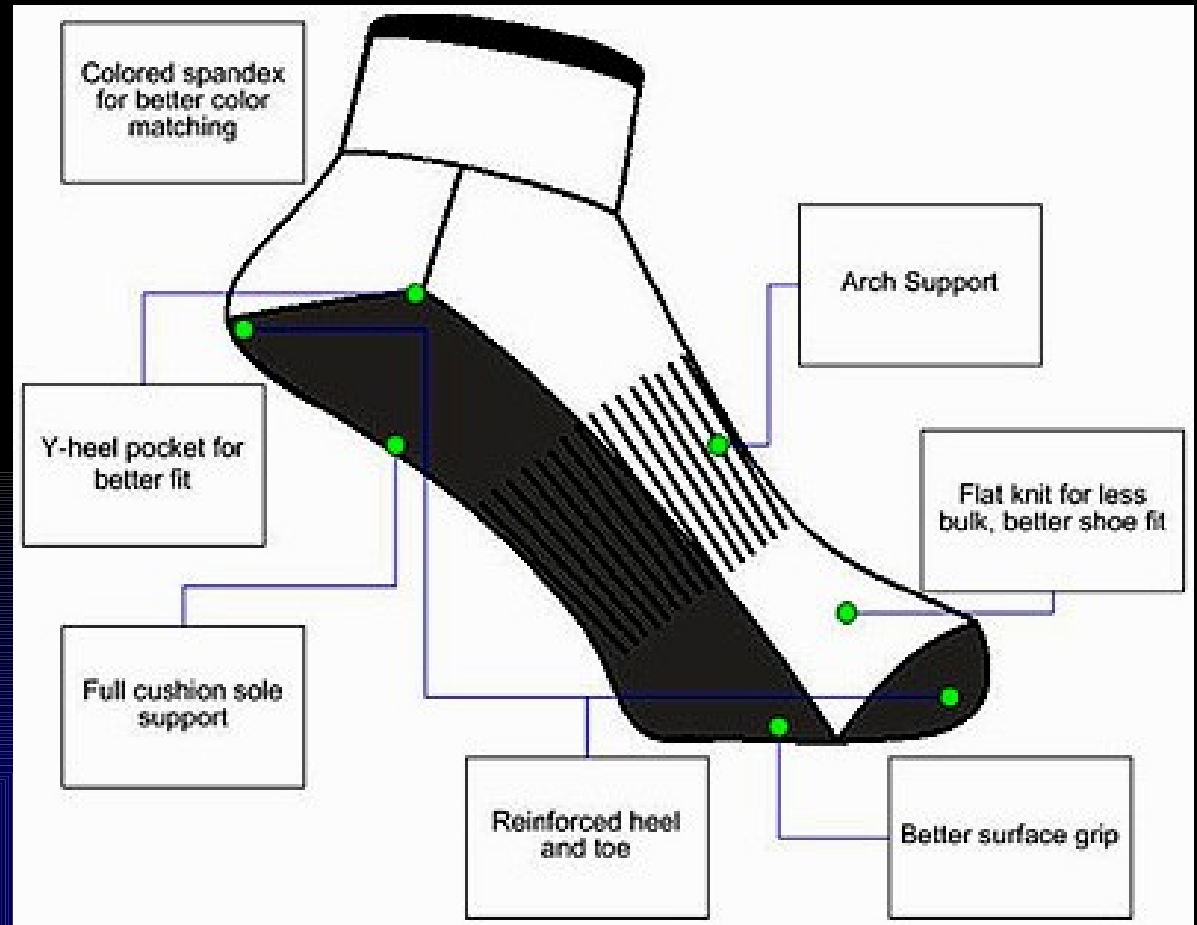
**Greenyarn, a Boston Nanotech Startup**

# As Novas Empresas Nano II



**Greenyarn**, a Boston nanotech startup, has recently introduced Eco-fabric socks – socks that self-deodorize and fight fungi and bacteria. These socks contain Eco-fabric, a fabric that fights bacteria and fungi, deodorizes, resists static, promotes blood circulation and is a completely green material made from renewable bamboo charcoal.

# As Novas Empresas Nano II



These short socks come up to just around the ankles and its cushion sole reduces shocks. These socks are highly suitable for users who spend a lot of time on their feet, such as athletes, nurses, or teachers.

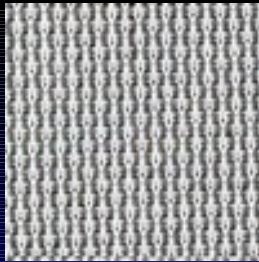
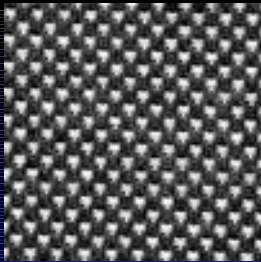


# As Novas Empresas Nano II



## Eco-fabric

Amostras dos tecidos que combinam **Eco-fabric** com Polyester, Algodão, Nylon, Lã ...



No.: PLB-06002  
Width: 44"  
Weight/Yard: 270g.  
Composition:  
Polyester 42%  
Eco-fabric 58%

No.: PLB-06014  
Width: 36"  
Composition:  
Cotton 34%  
Eco-fabric 66%



[www.greenyarn.com](http://www.greenyarn.com)

# As Novas Empresas Nano II



# As Novas Empresas Nano II



Contains nano-particles  
of bamboo-carbon

Moist+ is a relaxing at-home facial treatment for vibrant, soft and silky-smooth skin. The soft Eco-cotton facial mask will give you the moisturizing and relaxing benefits of a spa-quality facial in your own home. Each mask is pre-cut and pre-moistened with a relaxing mix of rose hip extract, marine collagen, Hyalurosan, Mulberry Bark Extract and Matricaria extract, to moisturize your skin and boost its radiance. Moist Plus will moisturize and repair your skin and prevent wrinkle formation. It also protects against free radicals, and whitens your skin in just 15 minutes.

# NANO TECIDOS

## O QUE VEM POR AI...

### CHEMICAL-RESISTANT TEXTILES

Juan Hinestroza at North Carolina State University and researchers at the University of Puerto Rico have pioneered a method to develop chemical-resistant textiles by attaching nanolayers to natural fibers “We can specifically block warfare agents like mustard or nerve gas, or industrial chemicals, while still allowing air and moisture to pass through to make the fabric breathable. ”Chemicals are blocked, when they bind to the polymers of the fibers, which are made of materials which attract the chemical agents. These fabrics could be made into garments that offer very high levels of protection, without affecting comfort or usability. There are dozens of potential uses of this technology : gloves coated with arthritis drugs; military uniforms coated with antibacterial layers to prevent infection in case of wound; antibacterial sheets for submarine bunks to prevent illness spread as these bunks are shared by enlisted personnel; and comfortable protective clothing against several chemical and biological warfare agents, diapers coated with anti-itching polyelectrolytes or tissues coated with anti-allergy medicine.



# NANO TECIDOS

## O QUE VEM POR AI...

### **CLOTHING THAT EMITS SUBSTANCES BY SLOW RELEASE**

Micro-encapsulation involves depositing microcapsules onto a yarn or fabric containing a slow-release active agent. This process has led to the emergence of fragranced fabrics, with miniscule capsules of perfume (Austrim Textiles Pty Ltd, Sofileta) or moisturisers (Penn Elastic, Welbeck) incorporated in the actual textile.

### **GARMENT WHICH AUTOMATICALLY REMOVES UNWANTED HAIR**

James McGalliard has invented a fabric garment which automatically removes unwanted hair while being worn against the skin of the user. The garment is coated with a pressure sensitive microencapsulated depilatory agent. Pressure exerted by a hair stubble against the fabric causes the microencapsulation to rupture and dispense the depilatory agent in a small localized area around the hair follicle. The depilatory agent dissolves the hair stubble without irritating the user's skin.

# NOVOS SITES E REVISTAS



**Europe's largest independent  
Nanotech News site**



nanobusiness.org

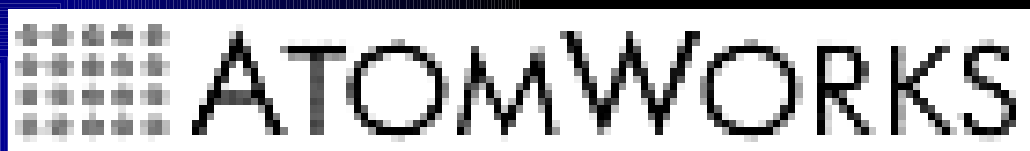
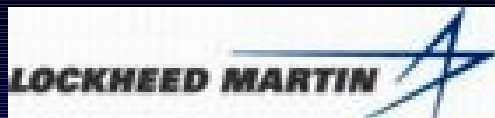
Our Business is Nanotechnology



# NOVAS EMPRESAS



The NanoAging Institute

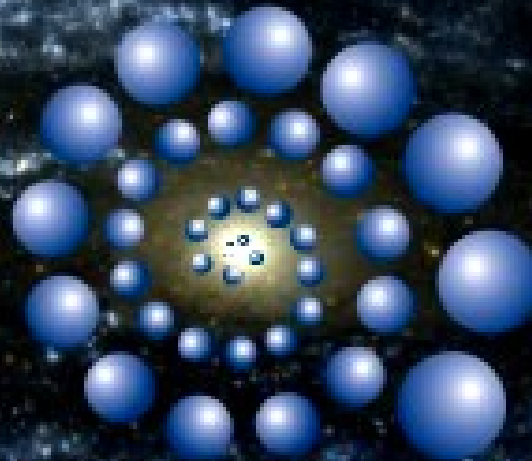


# Como a Nanotecnologia fará parte da nossa vida



- 1 - Organic Light Emitting Diodes (OLEDs) for displays
- 2 - Photovoltaic film that converts light into electricity
- 3 - Scratch-proof coated windows that clean themselves with UV
- 4 - Fabrics coated to resist stains and control temperature
- 5 - Intelligent clothing measures pulse and respiration
- 6 - Bucky-tubeframe is light but very strong
- 7 - Hip-joint made from biocompatible materials
- 8 - Nano-particle paint to prevent corrosion
- 9 - Thermo-chromic glass to regulate light
- 10 - Magnetic layers for compact data memory
- 11 - Carbon nanotube fuel cells to power electronics and vehicles
- 12 - Nano-engineered cochlear implant

**Venha ver essa nova tecnologia que está  
revolucionando o mercado !**



# **NANOTEC**

## **EXPO 2006**

**II FEIRA & CONGRESSO INTERNACIONAL  
DE NANOTECNOLOGIA.**

**ITM EXPO - SAO PAULO - 6 A 8 DE NOVEMBRO**

**Das 13:00 as 20:00hs – Entrada Gratuita**



# www.nanotecexpo.com.br

## Co-Promotores

FIESP

SESI

SENAI

IRS



abnee

ABIQUINA  
Associação Brasileira da Indústria Química



Apoio:

MINISTÉRIO DA CIÊNCIA E TECNOLOGIA

SECRETARIA DA CIÊNCIA, TECNOLOGIA E DESENVOLVIMENTO ECONÔMICO DO ESTADO DE SÃO PAULO

FINEP • FAPESP • ABNT • SEBRAE S.P.

Patrocínio Platinum



SENAI



SUZANO  
PETROQUÍMICA

Iniciativa e Realização





***1978 / 2006***

**[www.nanotecexpo.com.br](http://www.nanotecexpo.com.br)**  
**[www.rjrconsultores.com.br](http://www.rjrconsultores.com.br)**