

**Nanotechnologies:  
potential benefits or a  
great danger ?**



## Objectives:

- To study the origin of nanotechnologies.
- To see the difference between normal and nanoprodukt.
- To learn more about contribution of Perm scientists in nanotechnologies.
- To investigate if lyceum students know much about nano.

# Steps from the Stone Age to the Epoch of Nanotechnology.



**JOBS AND CAREERS  
IN NANOTECHNOLOGY**



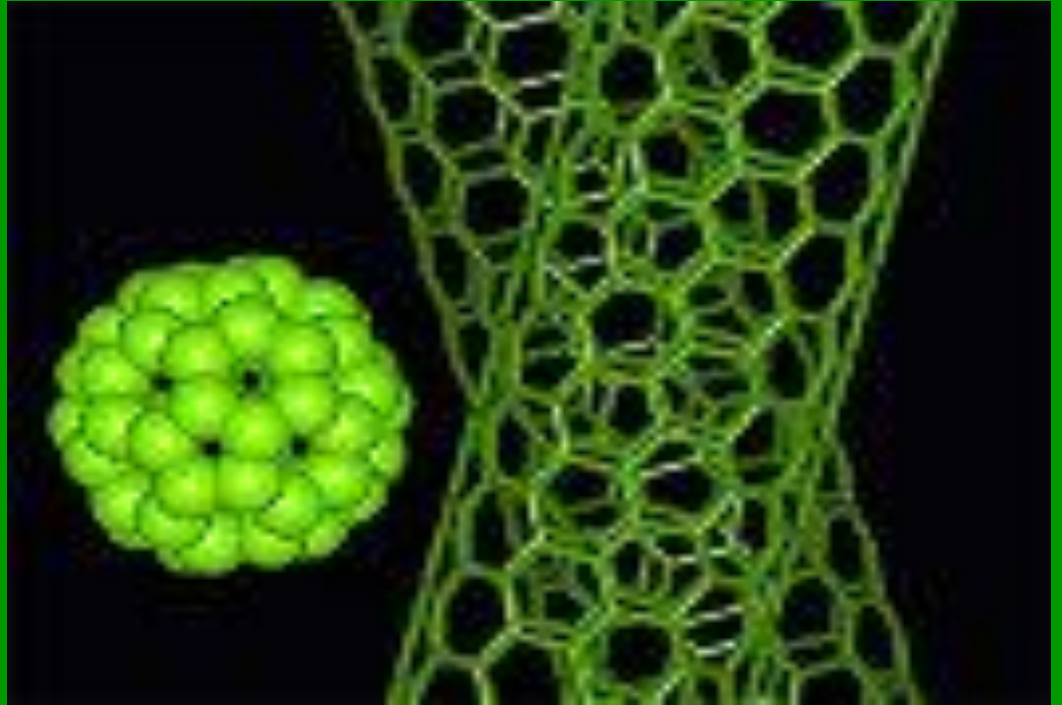


□ Nanotechnology is the study of phenomena and fine-tuning of materials at atomic, molecular and macromolecular scales, where properties differ significantly from those at a larger scale.

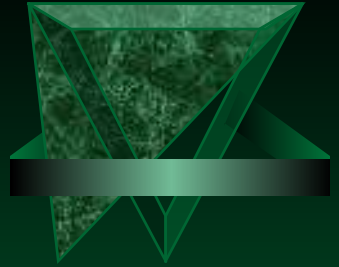


# There are some main trends in nanotechnologies today:

- Making nano electronic schemes

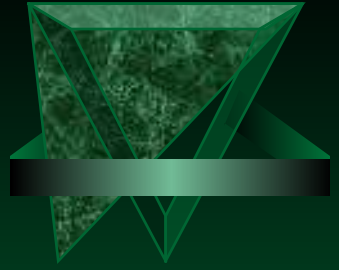




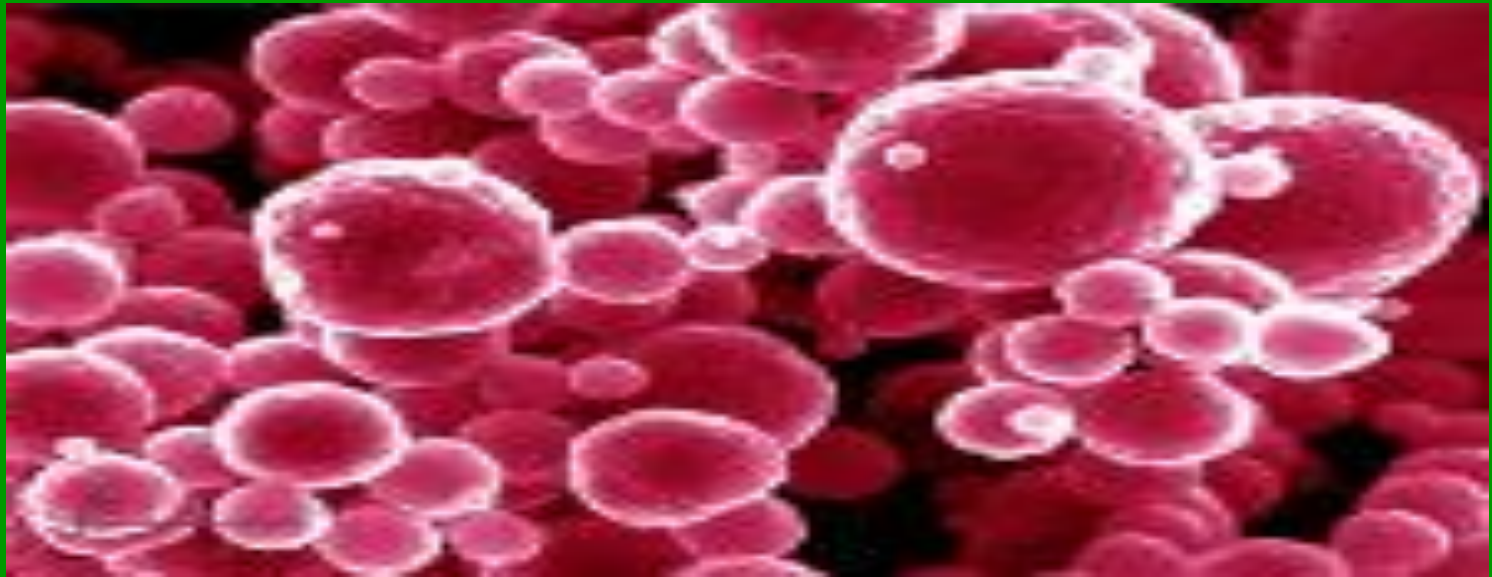


# Design & producing nanomachines






Manipulation of separate atoms  
& molecules and making  
microobjects out of them (tunnel  
microscope, disks, DVD)



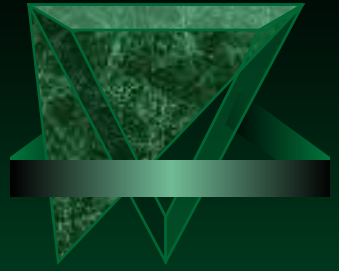






Since 2008 it has been headed by  
Anatoliy Chyubais.

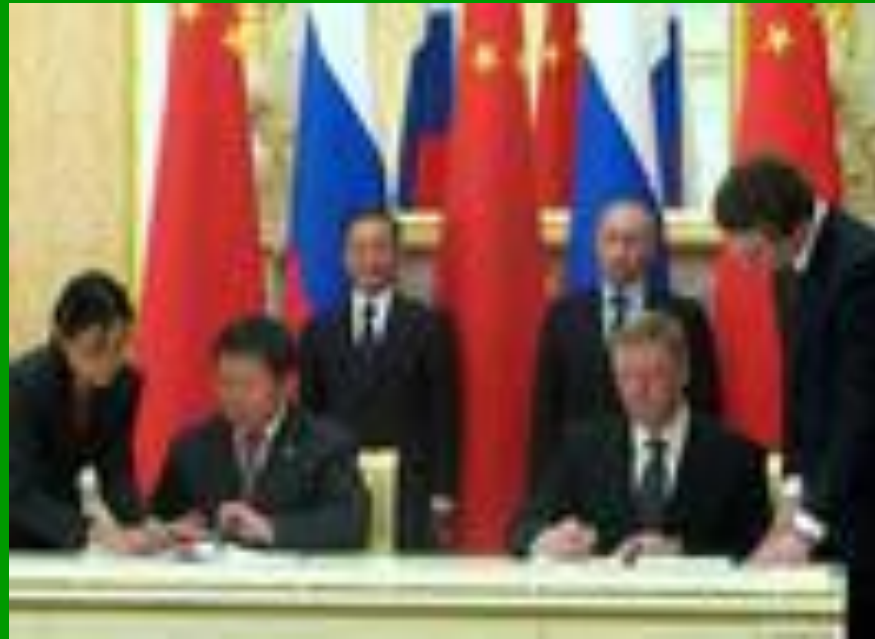




# The meeting of Russian and the UK scientists in Moscow(January 16, 2009)



# The meeting of Chinese & Russian scientists (December 15, 2008)





A new report from the British government's Royal Commission on Environmental Pollution says "new governance arrangements are necessary" to deal with the profound implications of advanced nanotechnology, and warns that this "will take time, possibly decades, to develop and implement and we hope the US and other countries will follow the UK. "

— **Mike Treder**, The UK Center for Responsible Nanotechnology





Vladimir Baldin ,the chief technologist of the Perm plant «Mashinostroitel», the head of the Perm group for the construction of the Large Hadron Collider.



Elena Lopatina, lyceum's  
schoolleaver, a journalist of  
Arguments &  
Facts (Prikamie),  
in No.6/2009 interviewed the  
academition of RAN  
Vladimir Antsiferov(Perm  
Technical  
University)- Where Can We  
Use NANO?

Заносится в Книгу Почета

Ученица 11г класса

*Лопатина Елена Александровна,*  
окончившая школу

*с золотой медалью*  
*«За особые успехи в учении»,*

участница и призер городских  
олимпиад по истории Отечества,  
русскому языку, географии,  
экономике, победитель XI городского  
конкурса научно-исследовательских  
работ учащихся (секция литературы),  
дипломант XXIII областного конкурса  
научно-исследовательских работ  
учащихся (секция литературы).

24 июня 2003 г.  
Директор лицея

О.И. Накарякова.



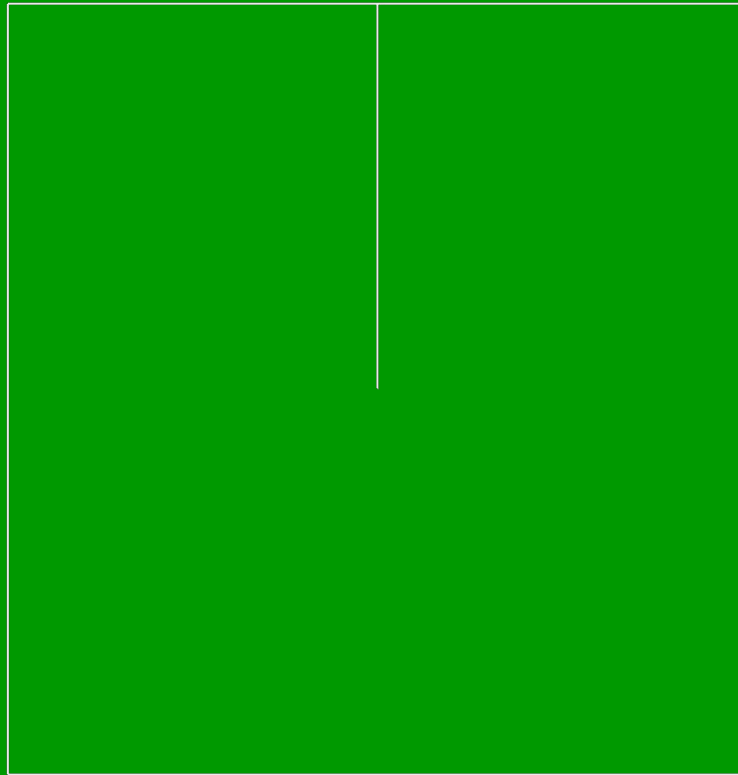


# Latest NANO News:

- The delegation of ROSNANO, headed by Anatoliy Chyubais visited PERM (11- 12 March , 2009) and discussed the questions connected with the organization of the branch of ROSNANO in PERM.
- The leaders in NANO in Perm krai –Perm Technological Research Institute, ZAO”NOVOMET,” Perm Instrument Making Company.



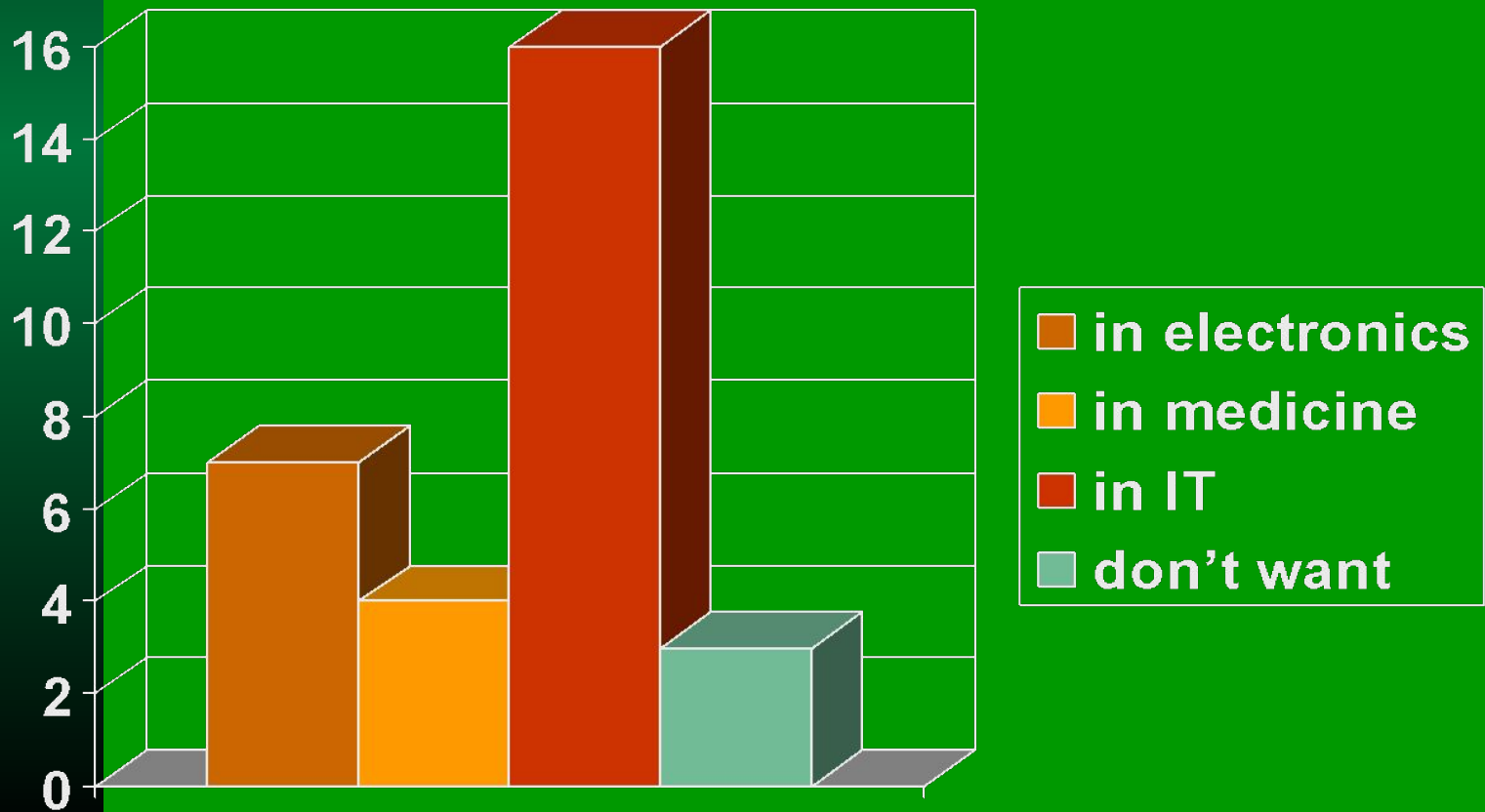
# Do you know what NANO is?



■ 100%

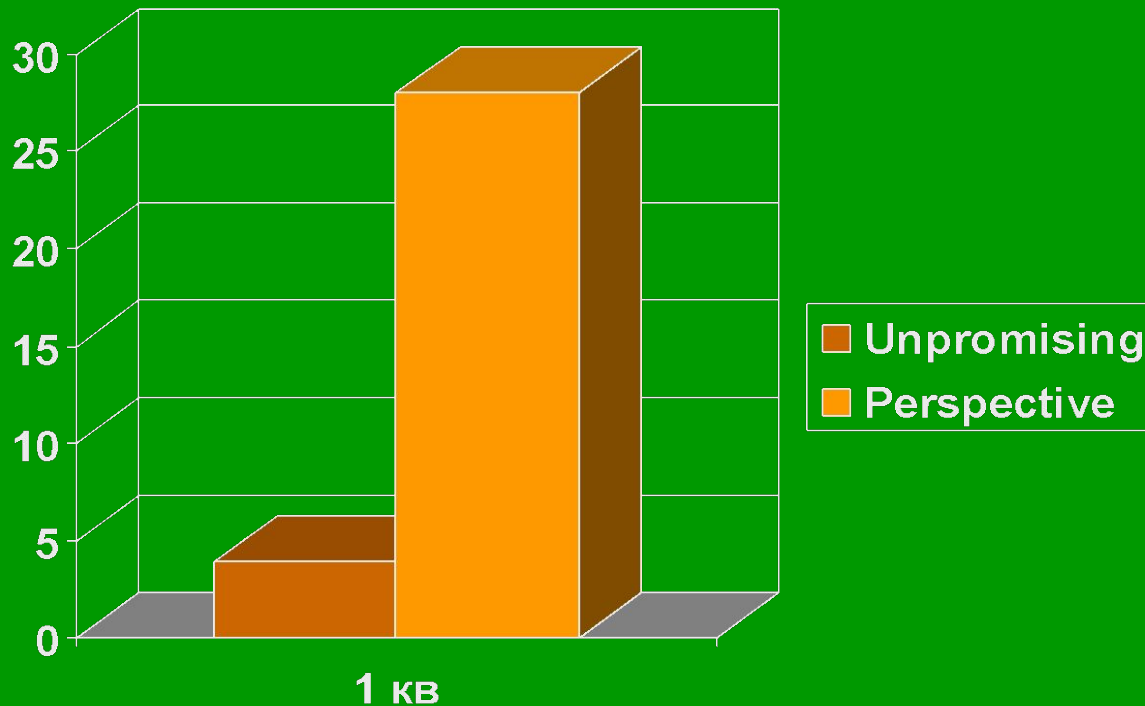


# In what nanobranh would you like to invent something ?

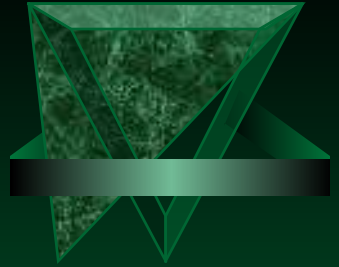




# Have nanotechnologies potential benefits ?







# Nano's Pros

- To continue the revolution in computer hardware
- To develop a new manufacturing technology in metallurgy, IT, medicine, security.



# Cons of NANOMATERIALS

- Some nanomaterials proved to be toxic to human tissues and cells.
- Some nanomaterials can cause potential DNA mutations.

## JOBS AND CAREERS IN NANOTECHNOLOGY

### JOBS IN NANOTECHNOLOGY :: LATEST JOB POSTINGS

More Jobs in Semiconductor [Postdoctoral position in MEMS/NEMS sensor development](#)  
The candidate will be responsible for fabrication of nanoelectronic and micro/nanoelectrom...

More Jobs in Materials [scientist](#)  
research Scientist...

More Jobs in Medical/Pharmaceuticals/  
Healthcare [Scientist positions in Nanobioscience for Indian Nationals](#)  
Research & Development in Nanobiotechnology as relevant to applications in medicine, agric...

More Jobs in Electronics [Mechanical Modeling Engineer / MEMS](#)  
Provide mechanical modeling for a MEMS related project....

More Jobs in Universities/Educational Institutes [Postdoctoral Research Opportunities in Microfluidic Technologies for Biomedical Engineering Applications](#)  
See detailed job description...

More Jobs in Semiconductor [Assistant Professor or Associate Professor](#)  
There is one faculty position (Assistant or Associate Professor) open in the field of Disp...

More Jobs in Aerospace [manager](#)  
<http://www.workingin-nanotechnology.com/job/293h><http://www.workingin-nanotechnology.com/job...>

More Jobs in Medical/Pharmaceuticals/  
Healthcare [Microfluidics Engineer/MEMS](#)  
Nanobiosym, Inc is seeking strong candidates to work in a dynamic team environment of phys...

More Jobs in Semiconductor [MEMS Test Engineer](#)  
MEMS device testing at different stages of design...

More Jobs in Universities/Educational Institutes [Director of Microfluidics](#)  
Manage microfluidic facility and collaborate with research scientists from physics, chemis...

More Jobs in Chemical [MANAGER](#)  
Bloemfontein ...

More Jobs in Universities/Educational Institutes [Postdoctoral fellow](#)  
The applicant will join a NanoBiotechnology team to develop nanoscale based diagnostic sys...

### EDUCATION AND TRAINING :: TEACHERS, GRADUATES, CAREERS

Undergraduates [USA - South Carolina - Columbia - University of South Carolina - Research Experience for Undergraduates in Nanoscience](#)

This is a summer research program for undergraduates. Applications are online at <http://...>

High School Teachers [USA - Illinois - Evanston - Northwestern University - Institute for Nanotechnology - Research Experience for Teachers \(RET\)](#)

Ongoing professional development for teachers is an important step in the revitalization o...

Graduates [USA - Texas - Houston - Rice University - Center for Biological & Environmental Nanotechnology - Professional Master's in Nanoscale Physics](#)

Non-thesis master's degree combining the study of quantum theory and practical nano- and m...

Middle School Teachers [USA - Massachusetts - Boston - Harvard University - Materials Research Science & Engineering \(MRSEC\) & Nanoscale Science & Engineering Centers \(NSEC\) - Research Experience for Teachers \(RET\)](#)

This program will introduce public school teachers to ongoing NSEC research and develop o...



# Jobs in nanotechnology: Latest Job Postings

- Research Scientist in Semiconductors
- Nanobioscience
- Mechanical Modelling Engineer
- Microfluidic Technologies
- Aerospace
- IT
- Powdery Metallurgy



# Latest News!!!!!!

- Alexey Shaporev, our school leaver graduated in physics from the Moscow State University with honours, works in the branch of NANO.
- Polina Secheiko, our school leaver of 2009, is a first year student of the department of NANO materials of the Moscow State University.





# Nano is.....

- Knowledge about the microworld, especially based on examining, testing and proving
- Discovery of new properties
- Fun.....that's why



«Value what you  
have but seek  
more.»

Isocrates, 4<sup>th</sup> century BC