

Presentation of Nanocompetition & Specific Results

NTSE Poster Competition aimed at encouraging the students (aged 14-18) to produce projects with regard to Nanotechnology. The participants had an opportunity to form their team with up to two friends. They selected a topic in nanotechnology about current and the possible future applications from given topics:

- Health (nanocosmetics)
- Environment (nanoparticles with antibacterial properties and nanoparticles used for purifying water and air)
- Nanotechnology used in Sport equipment
- Nanotechnology used in electronic devices

They made a first-class research and collected information, photos and images. The NTSE posters were designed about current applications in daily life and creative ideas/innovations for the future of nanotechnology in 300 words, A1(59 cm x 84 cm) in size with a clear title. 145 posters were uploaded to Virtual Lab web site in six countries (BG, DE, EL,IT, RO& TR) until 15 March 2013. The statistics about the number, age range of the competitors in NTSE Poster Competition:

| | BG | EL | IT | RO | TR |
|--|----|----|----|----|----|
| The students between 13-15 | 0 | 17 | 0 | 28 | 9 |
| The students between 16-18 | 19 | 10 | 44 | 0 | 70 |
| Number of the competitors | 19 | 27 | 44 | 28 | 79 |
| Number of the posters passing the content evaluation | 12 | 13 | 9 | 15 | 51 |
| Number of the posters in Antalya | 7 | 6 | 6 | 6 | 14 |

The examination period was initiated on 16th April 2013 and finished on 19th April 2013. The aim of the evaluation is to ensure a fair assessment of the NTSE project posters produced by the students involved in the competition. All partners were in charge of poster evaluation and NTSE posters were evaluated in two steps by a committee comprised of international group of scientists with expertise in nanotechnology. First selection was done according to the criteria in the RUBRIC below.

| Percentage distribution | Criteria | Points |
|---------------------------------------|--------------------|---------------|
| 60% | Clarity of Content | 18 |
| 20% | Clarity of Design | 6 |
| 20% | Online voting | 6 |
| 1st SCORE | | 30 |
| ANTALYA SCORE (EXTERNAL SCORE) | | 20 |
| TOTAL SCORE | | 50 |

To be a finalist in APMAS 2013 Congress, 135 selected posters were voted online in the networks they are linked with (Facebook, twitter, google+, etc) and announced on our Virtual Lab.

Following the online voting 40 posters were exhibited in APMAS 2013 International Congress in Antalya (<http://www.apmas2013.org/>) and all posters were evaluated during the Congress by the scientists externally. All national winners chosen from partner countries were announced on our Virtual Lab and all winners were awarded to take part in the International nanoscience camp in the city Balchik, Bulgaria between 29th of June and 7th of July.

| Name, School | Poster |
|--|---------------|
| <p>Nationality and Name of Student TR - Furkan SATIŞ</p> <p>Name of School ACARKENT DOGA HIGH</p> <p>Poster Title Nanomedicine</p> | |
| <p>Name of Student GR - Stratis TRACHANIAS, GR - Nikiforos MPLEMENOS, GR - Alexandros MOSCHOGIANNAKIS</p> <p>Name of School 2nd Gymnasium of Heraklion, Crete</p> <p>Poster Title Applications of Nanoelectronics</p> | |

| | |
|--|--|
| <p>Name of Student IT - Davide CAGNO</p> <p>Name of School Liceo Scientifico Mazzini Napoli</p> <p>Poster Title Nano for of Diabetes Mellitus</p> | |
| <p>Name of Student BG - Victoria T. TRENDAFILOVA</p> <p>Name of School National High-school of natural sciences and</p> <p>Poster Title Nanotechnology Used In Electronic Devices</p> | |
| <p>Name of Student RO - Dogaru GABRIELA</p> <p>Name of School Liceul de Arte "Bălașa Doamna"</p> <p>Poster Title Nanotrchnology In Sports Equipment</p> | |

PROFILE OF TURKISH POSTER COMPETITORS

In total 79 students - 31 female and 48 male- attended NTSE Poster Competition from more than 20 different schools. 51 posters were successful in content evaluation and they were exhibited on our Virtual Laboratory to be voted online. 23 of these 51 posters were about health and nanocosmetics, 4 of them were about nanotechnology used in sport equipment, another 4 of them were about environment and 20 of them were about nanotechnology used in electronic devices and all other kinds of areas such as agriculture and textile. 14 posters passed the semi-final stage to go to Antalya Apmas, International Advances in Applied Physics and Material Science Congress, on 24 April 2013. These posters were also voted in Antalya and the winner of the poster competition is the 10th grade student from Acarkent Doga High School.

| No | Name-surname | School | Title |
|----|---|--|--|
| 1 | ABDULKADİR UZUN | SAKARYA DOĞA | NANO-TECH FILTER |
| 2 | AHMET ÖMER KADER, ARDA EGE ÖZTÜRK, MUHAMMED ÇİFTÇİ | DOGA COLLEGE | WHEN DREAMS MEET REALITY |
| 3 | ALİCAN TUNÇ, ÇAĞRI BOZKURT, DAMLA BUŞE ÇAKIR | DOGA COLLEGE | NANOPARTICLES |
| 4 | ALİANDA EZGİ GERÇEKER | ATAŞEHİR DOĞA | NANOTECHNOLOGY IN FABRICS |
| 5 | ALPER ŞEKERCİ, MEHMET BERK SOFUGİL, DENİZ ŞAFAK ÇELİK | ACARKENT DOGA HIGH | NANOARMOR POSTER |
| 6 | ANILCAN ERCİYES | DOGA COLLEGE | NANOCLOTH |
| 7 | ARDA SU GÜRŞEN | BOSTANCI DOGA | THINK SMALL |
| 8 | ASYA KADIC | KARTAL DOGA HIGH SCHOOL | STRONGER NANOFIBERS |
| 9 | ATA MADENOĞLU | ÜSKÜDAR DOĞA HIGH | I'M SMALL BUT I CAN DO BIG WORKS |
| 10 | ATA YAĞIZ NART, BERA ERDENAY ALTUN | DÜZCE DOĞA | TITANIUMDIOXIDE NANOTUBES |
| 11 | ATAHAN VURAL | ACARKENT DOGA HIGH | NANOTUBES POSTER |
| 12 | AYŞE BERİL HERAL | ÇANKAYA DOGA | NANOTECHNOLOGY AND NANOMEDICINE |
| 13 | BATUHAN KOÇHAN, KAN MERT, AYKUT CANER ALİ | DOGA COLLEGE | MOLECULAR NANOTECH |
| 14 | BEGÜM ÇINAR, CEYDA KÖSE | DOGA COLLEGE | NANO-MEDICINE |
| 15 | BERKAY SANDIKÇI | ÇEKİRGE DOĞA | NANOTECHNOLOGY IN MEDICINE WITH NANOROBOTS |
| 16 | BİRCE | HALKALİ DOGA | TEXTILE ENGINEERING |
| 17 | CEM KADIRGAN | ACARKENT DOGA HIGH | NANOTECHNOLOGY IN SPORT |
| 18 | CEREN İŞLEKLİ | DOGA COLLEGE | NANOTECHNOLOGY IN CANCER TREATMENT |
| 19 | CEYHUN PİRNAZ, YUSUF BERK CAN, YUSUF MERT ÖZTEKİN | DOGA COLLEGE | NANOTECH&CANCER |
| 20 | DENİZ TETİK | ATAŞEHİR DOĞA | NANO LIFE |
| 21 | DERİN AKYEL | ACARKENT DOGA HIGH | A BRIEF INTRODUCTION TO NANOTECHNOLOGY |
| 22 | EDA YASAN | 30 AĞUSTOS KIZ TEKNİK VE MESLEK LİSESİ | NANO MUSCLE |
| 23 | EGE CUCUMAK | ÇEKİRGE DOĞA HIGH | NANOCOSMETICS |
| 24 | ELİF GÖKMAN | ÜSKÜDAR DOĞA | MY LITTLE NANO-HEALTH |

| | | HIGH | |
|----|--|--|--|
| 25 | ELİF KURT-BÜŞRA TAŞOĞLU-SELİN DEMİREL | ÇEKİRGE DOĞA HIGH | GREAT EFFECT FROM NANOCOSMETICS |
| 26 | ELİF PALACIOĞLU | SAKARYA DOĞA | COLOR CHANGING HAIR DYE |
| 27 | EMİNE ADIBELLİ | 30 AĞUSTOS KIZ TEKNİK VE MESLEK LİSESİ | NANO MIRACLE |
| 28 | EMRE YÜCEL, GÖKTUĞ YALÇINTEPE, ONAT TAŞKIN | DOGA COLLEGE | NANOMATERIALS INSIDE OUT |
| 29 | FIRAT İPEKOĞLU | DOGA COLLEGE | TIMES OF CHANGE |
| 30 | FURKAN KARADENİZ, YİĞİT ATA TÜRK, | DOGA COLLEGE | NANO-FUTURE |
| 31 | FURKAN SATIŞ | ACARKENT DOGA HIGH | NANOMEDICINE |
| 32 | GÜLŞAH LİVATYALI | ÜSKÜDAR DOĞA HIGH | BEAUTIFYING NANOTECHNOLOGY |
| 33 | GÜN CELİL AKIN | ACARKENT DOGA HIGH | NANOTECHNOLOGY IN SPORT |
| 34 | GÜNEŞ BÜYÜKGÖNENÇ | DOGA COLLEGE | YOUR HEART IS SAFE WITH NANOTECHNOLOGY |
| 35 | HATİCE ÇANKAYA, YAĞMUR NİSA DURSUN | AYDIN DOĞA | THE ELIXIR OF YOUTH |
| 36 | İLKE BOLUKBAS & NİHAN AKCAN | USKUDAR DOGA | APPLICATION OF NANO TECHNOLOGY ON SPORTSWEAR |
| 37 | KAAN SAYIN | HACI RAHİME ULUSOY MARİTİME TECHNICAL | BUCKY AIR CLEANER TUBES |
| 38 | MAZLUM DOGUKAN AKYOL | BEYKENT DOGA | NANO MEDICINE |
| 39 | MEHMET YILDIRIM | BOSTANCI DOGA | NANO TECHNOLOGY IS EVERY WHERE |
| 40 | MERYEM BÜYÜK | USKUDAR DOGA | 21ST CENTURY HEALTH CARE REVOLUTION |
| 41 | MUHSİN KÜREKÇİ | ÜMRANIYE ANADOLU İMAM HATİP LİSESİ | OPTIC TWEEZERS |
| 42 | ONDER CAKIOĞLU | USKUDAR DOGA | NANO COSMETICS |
| 43 | ÖMER FARUK ORHAN | MALATYA DOGA | COMING SOON TO A DENTIST NEAR YOU |
| 44 | ROBIN YILMAZ | DOGA COLLEGE | NANOELECTRONIC |
| 45 | SEHER AKDAS | MALATYA DOGA | NANOTECHNOLOGY IS IN SPORT NOW! |
| 46 | SELCAN ÇINAR YILDIRIM | KURTKÖY DOĞA | NANOTECHNOLOGY APPLICATIONS |
| 47 | SELEN DEFNE DEMİRALP | HALKALİ DOGA | NANOBIOTECHNOLOGY |
| 48 | SELİN YILMAZ | SAKARYA DOĞA | SHILI |

| | | | |
|----|--------------------|--------------|---------------------|
| 49 | SEVVAL MELİS KOC | HALKALİ DOGA | NONLINEAR OPTICS |
| 50 | UMUT TAÇYILDIZ | SAKARYA DOĞA | SMART TOP |
| 51 | YİĞİTHAN CAVUSOGLU | USKUDAR DOGA | NANO-DYE TECHNOLOGY |

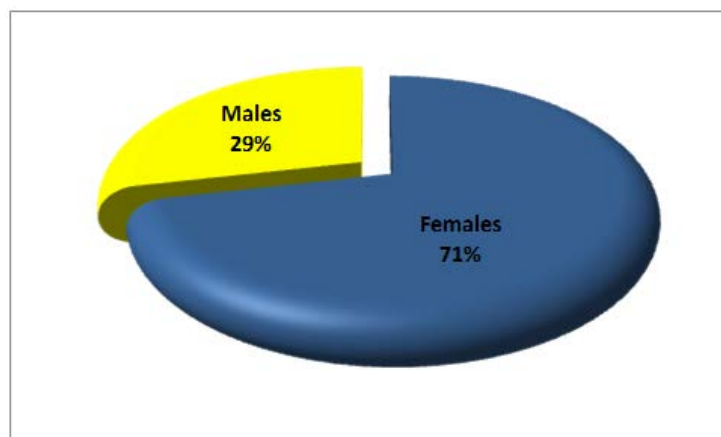
Table 1: 51 posters created by Turkish students and the name of their schools

Nanocompetition in Romania

The NTSE Romanian Team was involved in dissemination the Nanocompetition information and conditions at the level of schools from the south region of Romania. Different discussions with teachers and students took place in order to explain which are the minimal conditions of a poster in order to pass the national evaluation stage. In addition, the evaluation process of posters at international level was presented. The NTSE project dissemination materials have been spread at level of lower and upper secondary school from Dambovită County.

Profile of Romanian Poster Competitors

In total 28 Romanian students from the secondary school attended NTSE Poster Competition. The gender distribution of participants is presented below:



Concerning their age, all of the competitors were between 13 and 15 years old. After the national evaluation, 15 posters were successful regarding the content evaluation and they were uploaded and exhibited on the NTSE Virtual Laboratory to be voted online.



| Poster no. | Name and surname | Title of poster | Organization/School |
|------------|---|--|---|
| 1 | Dogaru Gabriela | <i>Nanotechnology in sports equipment</i> | Liceul de Arte "Bălașa Doamna" Târgoviște |
| 2 | Dragomir Raluca; Mihai Raluca; Vancea Carmen | <i>A chance for life – A 3rd millennium miracle</i> | Școala "Vasile Cârlova" Târgoviște |

| | | | |
|----|--|--|---|
| 3 | Rotaru Mădălina Petruța; Mîinea Veronica Evelina | <i>Nanobots Applications</i> | Școala Gimnazială Gura-Șuții |
| 4 | Vlăduca Andreea Gabriela | <i>Nanotechnology and medicine</i> | Liceul de Arte "Bălașa Doamna" Târgoviște |
| 5 | Căpraru Gabriela; Nănescu Ionela | <i>Do you know what hides behind perfection?</i> | Școala "Vasile Cârlova" Târgoviște |
| 6 | Sularia Andreea; Ștefani Diana | <i>Nano-technology in Medicine</i> | Școala "Vasile Cârlova" Târgoviște |
| 7 | Andrei Bianca; Chiricu Miruna | <i>Smart materials using Nanotechnology</i> | Școala "Vasile Cârlova" Târgoviște |
| 8 | Nănescu Mihail; Roșu Lavinia; Iordache Flavia | <i>Divinity vs. Nanotechnology</i> | Școala "Vasile Cârlova" Târgoviște |
| 9 | Călin Maria | <i>Nanorobotics - gate to future</i> | Liceul de Arte "Bălașa Doamna" Târgoviște |
| 10 | Bălan Andreea | <i>Nanotechnology - health and cancer researches</i> | Liceul de Arte "Bălașa Doamna" Târgoviște |
| 11 | Toma Adriana Maria; Nedelcu Adriana | <i>Nanorobotics</i> | Școala Gimnazială Gura-Șuții |
| 12 | Vișan Florentin Sebastian; Petre Robert Constantin | <i>Nanotechnology in medicine - nanorobots</i> | Școala Gimnazială Gura-Șuții |
| 13 | Avram George Laurențiu; Barbu Petrică Mirel | <i>Nanotechnology</i> | Școala Gimnazială Gura-Șuții |
| 14 | Veseliu Andrei Alexandru; Niță Alexandru | <i>Applications of carbon nanotubes</i> | Școala Gimnazială Gura-Șuții |
| 15 | Toma Adriana Maria; Toma Marian Cosmin | <i>Silicon Nanotubes</i> | Școala Gimnazială Gura-Șuții |

Table 1: Posters created by Romanian students and uploaded in the NTSE Virtual Lab

The topics chosen by the Romanian students were related to application of nanotechnology in health, cosmetics, robotics, electronics and sports equipments. One of the interesting idea presented in a poster made by students from 8th grade from "Vasile Cârlova" School

Târgoviște was the relation between Divinity and Nanotechnology. Six of the total 15 Romanian posters passed the national evaluation and the semi-final stage to go and be exhibited and evaluated by the scientists who participated to International Advances in Applied Physics and Material Science Congress, that took place in Antalya, on 24 April 2013. After the vote process from Antalya the Romanian winner of the poster competition was Dogaru Gabriela, a 9th grade student from Liceul de Arte “Bălașa Doamna” Târgoviște. In the following table the six posters that participated to the international evaluation in APMAS Congress are illustrated.

| Name and surname | Title | Poster |
|--|--|--|
| Dragomir Raluca; Mihai Raluca; Vancea Carmen | <i>A chance for life – A 3rd millennium miracle</i> |  |
| Dogaru Gabriela | <i>Nanotechnology in sports equipment</i> |  |

| | | |
|---|---|---|
| <p>Rotaru Mădălina Petruța; Mîinea Veronica Evelina</p> | <p><i>Nanobots Applications</i></p> | <p>NANOBOTS APPLICATIONS Rotaru Mădălina Petruța & Mîinea Veronica Evelina Școala Gimnazială Gura Juiului, ROMANIA</p> <p>Nanobots: Nanorobotics is the emerging technology field creating machines or robots whose components are at or close to the scale of a nanometer (10⁻⁹ meters). More specifically, nanorobotics refers to the nanotechnology engineering discipline of designing and building nanorobots, with devices ranging in size from 0.1-10 micrometers and constructed of nanoscale or molecular components.</p> <p>www.nanochallenge.com</p> <p>www.dinova.fr www.robotics.tum.de</p> <p>The joint use of nanoelectronics, photolithography, and new biomaterials provides a possible approach to manufacturing nanorobots for common medical applications, such as for surgical instrumentation, diagnosis and drug delivery. Practical, nanorobots should be integrated as nanoelectronics devices, which will allow tele-operation and advanced capabilities for medical instrumentation.</p> <p>www.chelonrobotics.com</p> <p>We wish that in the future we may see more often transplants to Nanobot!</p> <p>References: www.wikipedia.org</p> |
| <p>Vlăduca Gabriela Andreea</p> | <p><i>Nanotechnology and medicine</i></p> | <p>NANOTECHNOLOGY AND MEDICINE Vlăduca Andreea Școala Gimnazială "Ștefan cel Mare" Târgușor, ROMANIA</p> <p>The microscopic robots: the doctors from inside The microscopic robots are additionally so that they can go inside the human body and work on the spot. They have started to be thought designed and made by scientists in a variety of projects.</p> <p>The microscopic robots traveling through the human body The simplest system is going to the nanotechnology which will allow the control of the human medical tools by the remote control of some laboratory. Any nanorobot, capable to travel in the human body to treat diseases.</p> <p>The microplants of the future Roger James Street and his team of synthetic engineers from the Monash University-Australia had made an organ of squid's eye for the purposes of artificial eye.</p> <p>Cancer treatment and carbon nanotubes The problem of cancer treatment is their irregularity in a system. This is due to strong irregularity of size and shape, which makes single-agent treatment to have an extremely powerful killing energy. This problem can be solved by using further research on drugs and it has been found that single-agent treatment is not compatible with biological systems.</p> <p>I am little, but I have big dreams. Nanotechnology will solve the big world problem - the cancer!</p> <p>References</p> <ol style="list-style-type: none"> http://www.wikipedia.org/wiki/Nanotechnology http://www.monash.edu.au/med/centres/centres/nanotechnology/index.html http://www.monash.edu.au/med/centres/centres/nanotechnology/1007.pdf http://www.pitt.edu/~drlab/nanoguy.htm |



| | | |
|---|---|---|
| <p>Căpraru Gabriela; Nănescu Ionela</p> | <p><i>Do you know what hides behind perfection?</i></p> |  |
| <p>Sularia Andreea; Ștefani Diana</p> | <p><i>Nano-technology in Medicine</i></p> |  |

Table 2: Romanian Students' Posters selected for international evaluation by the APMAS Congress Participants in Antalya, Turkey

Nanocompetition in Italy

An important milestone of the project regarded the Poster Competition, in which high school students (13-18 y.o.) were invited to express their creativity in the production of a poster related to Nanotechnology. The poster should have addressed some common topics, like including scientific facts, the students' opinion and vision of a future use of that branch of nanotechnologies they selected. Also some graphic and layout standards were suggested.

To launch the competition, Fondazione IDIS organized a training course for teachers, and 21 teachers for different high schools participated. 7 schools then decided to apply for the poster competition, and after the first contact, members of Fondazione IDIS went to the different schools to illustrate the rules of the competition.

Students chose application of Nanotechnologies in Health, Environment, Leisure and Sport, Electronic Devices and Human enhancement. 44 Students participated, with a first-class research and collection of information, photos and images. The posters were designed and written in 300 words, A1(59 cm x 84 cm) in size with a clear title. 22 posters were uploaded to Virtual Lab web site and were voted by general public through a social network until 15 March 2013. 9 posters were then selected considering the content, the graphic layout, the number of votes and the respect of the rules given. Out of these 9 posters, 7 were brought to Antalya for the final selection (2 posters were not given in the appropriate paper or digital form in the due time) and the best three posters from each Country were selected, by an international jury, to take part to the Nano Camp.

The students were very happy to take part to the competition, and expressed all their creativity and enthusiasm in spite of the fact that their teachers could not help much, due to the lack of information they had on the topic. Specifically one of the winning posters required a long and well structured work by the students, who, starting from a disease affecting a schoolmate, interviewed several doctors from the main hospitals in Naples and searched through scientific papers, how Nanotechnology could help curing the disease.

| Name and surname | Title | Poster |
|-------------------------------------|----------------------------|---|
| Davide Cagno e Riccardo Bordi | Nano for diabetes mellitus | <p>Nano for diabetes mellitus</p> <p>CURRENT APPLICATIONS</p> <p>Bottom-up and top-down are two different approaches to the development of nanoparticles. (Image 1) Researchers are analyzing different prospective for nanomedicine applied to diabetes which is nowadays an incurable disease. ¹</p> <p>A potential solution would be the use of microphysiometer built from multiwalled carbon nanotubes electrically conductive so that the concentration of insulin in the chamber can be directly related to the current at the electrode and the nanotubes operate reliably at pH levels characteristic of living cells. ² (Image 2)</p> <p>A promising near-term technology is "smart tattoo", which would contain polymer nanoparticles coated with molecules which fluoresce when glucose drops to dangerous levels, would create a visible glow in the skin. ^{3,8}</p> <p>Todd Zion has developed Smart Cells; when glucose rises in the bloodstream, it eats away SmartInsuline's structure and insulin is released ⁵ (Image 3)</p> <p>Scientists are trying to create nanorobots with insulin departed in inner chambers and glucose level sensor on the surface. ⁶ (Image 5)</p> <p>Future Applications</p> <p>We wish one day all diabetes problems could be solved by using nanotechnologies to correct genetically this disease. ⁹</p> <p>References:</p> <ol style="list-style-type: none"> 1. http://www.nanotechnology.com/nanotechnology/04/microphysiometer-using-multiwall-carbon.html 2. http://www.nanotechnology.com/nanotechnology/04/microphysiometer-using-multiwall-carbon.html 3. http://www.nanotechnology.com/nanotechnology/04/microphysiometer-using-multiwall-carbon.html 4. http://www.nanotechnology.com/nanotechnology/04/microphysiometer-using-multiwall-carbon.html 5. http://www.nanotechnology.com/nanotechnology/04/microphysiometer-using-multiwall-carbon.html 6. http://www.nanotechnology.com/nanotechnology/04/microphysiometer-using-multiwall-carbon.html 7. http://www.nanotechnology.com/nanotechnology/04/microphysiometer-using-multiwall-carbon.html 8. http://www.nanotechnology.com/nanotechnology/04/microphysiometer-using-multiwall-carbon.html 9. http://www.nanotechnology.com/nanotechnology/04/microphysiometer-using-multiwall-carbon.html |

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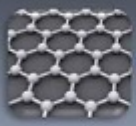
ALESSANDRO CAIANIELLO – STEFANO CAPIZZI
LICEO SCIENTIFICO STATALE LABRIOLA, NAPOLI

GRAPHENE

THE STRUCTURE OF THE FUTURE

WHAT GRAPHENE IS?

Graphene is a substance composed of pure carbon, with atoms arranged in a regular hexagonal pattern similar to graphite, but in a one-atom-thick sheet. This two-dimensional material is flexible, ultra-thin, and is about 200 times stronger than steel. It is also a good heat and electricity conductor, and its exceptional properties of electrons' transport make it the heir of the silicon in the electronics of the future.

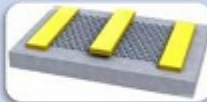


HOW CAN YOU USE THE GRAPHENE?

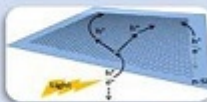
Nowadays graphene doesn't have a daily practical application. It is still object of study of many electronics companies and universities, such as IBM or the UCLA. Steve Yin (demonstration IBM) has tested this material as transistor: in 2010 they realized a graphene transistor with a frequency performance of 100 GHz. In the same year the UCLA achieved the record speed of 240 GHz. Another application that the scientists have discovered concerns the desalination of water. In 2012 a team of MIT demonstrated that, creating pores in the graphene sheets, it "can be far more efficient and possibly less expensive than existing desalination systems" (<http://news.mit.edu/2012/graphene-water-desalination-0102.html>). Graphene could be also used for flexible light solar cells: the costs would be lower and the performance higher thanks to the conducting properties of this material.

A NANO-DREAM

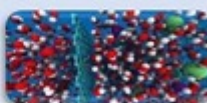
We hope one day human being could use graphene to create super-thin and roll-up electronic devices in order to make more comfortable mobile phones and tablets and, above all, to replace today's school books made of paper with just one "electronic sheet". It could ensure education for whole the world and could break down the waste of energy.



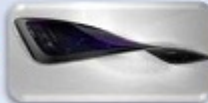
2



3



4



5

1- THE STRUCTURE OF GRAPHENE

2- A GRAPHENE-MADE TRANSISTOR

3- A GRAPHENE-MADE SOLAR CELL

4- THE DESALINATION

5- A HYPOTHETICAL GRAPHENE-MADE MOBILE PHONE

<http://en.wikipedia.org/wiki/Graphene>
 <http://www.understandingnano.com/graphene-applications.html>

Rosa Rapuano Lembo Cristina Esposito

How to limit addiction

How to limit addiction

... and if everything depends on nano

The safety in a microchip

Cristina Esposito and Rosa Rapuano Lembo 4 B- Tito Lucrezio Caro High School, Scienti




Effect of

Chronic use of drugs can cause neu higher cortical regions of the fronta can damage the ability to control in These changes also explain the o addicted persons. The discovery of regions responsible for learning an hippocampus) also explains why a relapse.

<http://www.OvergrowItaly.nl/wp-content/uploads/2010/10/droghe1.jpg>
<http://www.cortocircuito.re.it/wp-content/uploads/2010/12/sondaggio-droga.jpg>

How to apply nanotech

We should create a silicon microchip, coated with titanium dioxide containing a substance known as Plus-Naxolone. This medicine is able to turn off the need to use opioids, also eliminating the behaviors associated with addiction. Moreover, this medicine changes neurochemical processes in the brain, thus stopping the production of dopamine, which is the transmitter that generates the feeling of reward linked to the use of the drug. The microchip must be implanted in the human brain, in the meso-telencephalic dopamine system. It also affect the important role of Toll-like receptor 4 (TLR4), a receptor in the immune system that stimulates the feeling of reward experienced after the use of heroin and morphine.




Having a nano releaser of Plus-Naxolone has a big potential. We can control the processes of re leasing and targetting a specific area of the brain where it is more effective.




<http://sanitasenzaproblemi.it/img/articoli/datscan1.jpg>
<http://www.stefanocanali.com/AlterEgo/neurotrasmissione.SWF>
<http://www.stefanocanali.com/seim/dopamina.jpg>
<http://3.bp.blogspot.com/AAAAAAAHk7QM>

Current ap

The research team of the journal Ne (<http://www.jneurosci.org/content/>) has shown for the first time that blo using Plus-Naxolone, they can neutr opioids. In Mexico has been tested a (<http://it.euronews.com/2012/02/02/o-contro-l-eroina/>) able to defeat he laboratory animals. From these satis soon start the first tests on humans. director of the National Institute of F Molina – works by inhibiting the mo preventing it from overtaking the en way it blocks the effect of pleasure t



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Table 1: Italian Students' Posters which were selected by the APMAS Congress Participants in Antalya, Turkey

Nano-competition in Bulgaria

In Bulgaria the Nano-competition was announced in December 2012 with a deadline for submission of the posters 22 February 2013. Center for Creative Training Association distributed the call for the competition with priority to 77 science teachers from all over Bulgaria, who passed the invitation to their students, to all the Regional Inspectorates of Education and to its all relevant associated partners.

CCTA received 15 posters from 20 participants (some of them work in pairs). For the posters received before the deadline Alexander Angelov (CCTA) and Kichka Minkova (Sirma Media) offered feedback on what can be improved so that the posters answer to all criteria. Only two posters were disqualified because they weren't corresponding to the topic of the competition.

The posters went through two stages of evaluation – the first stage was concerning the technical specifications of the posters and correspondence to the criteria. The creators of the eligible posters were asked to send high-resolution versions of their posters, which were later printed and exhibited during the Nano Conference in Antalya in April 2013.

The best posters were chosen by independent nano-experts who were visiting the conference by anonymous voting system.

The winner from Bulgaria – Viktoria Trendafilova and Elitsa Venchova



