

The new authority in science

Ausgabe 5-2014
www.Auris-verlag.de

Eastern European Scientific Journal Supplement

Eastern European Scientific Journal

(ISSN 2199-7977)

Supplement



**Kommunikations- und
Verlagsgesellschaft mbH**

www.auris-verlag.de

DOI 10.12851/EESJ201410

IMPRESSUM:

Copyright:

©2014 AURIS Kommunikations- und Verlagsgesellschaft mbH
Düsseldorf - Germany

Internet:

<http://www.auris-verlag.de>

E-Mail:

M.Moneth@auris-verlag.de

Verlagsredaktion:

Khvataeva N. D.Ph. chief editor
Zaharishcheva M. D.Ph. prof., editor
Plekhanov Theodor I. ScD, prof., editor
Lobach Elena A. PhD, associate prof., editor
Brenner D. D.Ph. editor
Muhina A. D.Ph. editor
Blinov I. D.Sc. editor
Moneth T. M.Ph. designer/breadboard
Moneth M. M.Ph. breadboard

Layout:

Moneth M.

Umschlaggestaltung:

Moneth M.

Coverbild:

AURIS Kommunikations- und Verlagsgesellschaft mbH

Dieses Werk ist urheberrechtlich geschützt.

Alle Rechte, auch die der Übersetzung, des Nachdruckes und der Vervielfältigung des Buches oder Teilen daraus, vorbehalten. Kein Teil des Werkes darf ohne schriftliche Genehmigung des Verlages in irgendeiner Form, auch nicht für Zwecke der Unterrichtsgestaltung – mit Ausnahme der in §§ 53, 54 URG genannten Sonderfälle -, reproduziert oder unter Verwendung elektronischer Systeme verarbeitet oder verbreitet werden.

DOI 10.12851/EESJ201410

Viktor Ivanovich Petrik

Is member (academician) of:

- the Russian Academy of Natural Sciences (RAEN);
- the Academy of Technological Sciences of the Russian Federation;
- the St. Petersburg Academy of Sciences and Arts (PANI);
- the International Academy of Sciences, Ecology, Safety of Man and Nature (MANEB);
- the St. Petersburg Academy of History of Science and Technology;

Has the following degrees:

Doctor of Technical Sciences;
Professor at the International Slavonic Academy of Sciences, Education, Arts and Culture;
Honorary Professor at the European University;

Is the author of two monographs:

1. "Protected optical materials, spinels." No. 1, Irkutsk, 2011.
2. "Anti-Stokes compounds and materials on their basis." No. 1, Irkutsk, 2012.

General trends of his scientific endeavors:

Fundamental research in the field of nuclear physics, crystallography and optical protective ceramics, carbon and carbon materials, metals of the platinum group, silicium for solar energy, anti-Stokes compounds.

V. Petrik is the author of four scientific discoveries certified by the International Association of Authors of Scientific Discoveries.

Discoveries

- 1. "Phenomenon of the magnetically regulated state of the osmium-187 isotope in a ferromagnetic matrix." Diploma No. 180**

V. Petrik elaborated on government order the technology of a super-pure Os-187 isotope, and that was a sensation in the scientific world. In an attempt to smuggle out of the country 8 grams of Os-187 of 99.68% purity produced in V. Petrik's laboratory, V. Savenkov the deputy mayor of St. Petersburg was arrested and sentenced to a 5-year prison term.

In the cyclotrone of the Scientific Research Institute of Physics at the St. Petersburg University, from 1996 to 1999, under the leadership of V. Petrik, there have been carried out basic studies of the properties of the nucleus of Os-187. Elaborated has been a small apparatus for registering microgram quantities of Os-187 without any external magnets. There have been demonstrated ways of constructing a gamma laser on the basis of Os-187.

The research results have been reported in presentations at:

- the International Meeting of Nuclear Physics, Moscow, 1996
- the International Meeting "Properties of destabilized Nuclei", St. Petersburg, 1997
- the International Conference of Nuclear Physics, St. Petersburg, 2000

2. "Phenomenon of the forming of nanostructure carbon complexes." Diploma No. 163

In 1997, V. Petrik for the first time demonstrated the possibility of the stable existence of a grapheme outside of a graphite crystalline grid and elaborated the industrial production of a mixture composed of graphenes by cold destruction.

There have been elaborated and patented the following technologies of applying graphenes:

- Purification of drinking water;
- Purification of blood plasma;
- Neutralization of toxic waste and liquidation of chemical weapons contents;
- Liquidation of oil and oil product spill accidents on land and water surfaces;
- Treatment of skin affections;
- Matrix of neutralizer of exhaust fumes;
- Disposal of liquid radiation waste;
- Separation of hydrogen isotopes;
- Virus removal purification of air..

On the basis of many-year research carried out at various institutions the Russian government approved the United Russia party project "Pure Water". According to the project there should have been installed grapheme sorbent filters at educational institutions, schools, kindergartens and hospitals. However, the project ran up against fierce resistance and criticism in the media instigated and organized by the Commission against Pseudoscience of the Russian Academy of Sciences.

3. "Phenomenon of nuclear spin selectivity in reverse chemical reactions with graphenes." Diploma No. 312

On the basis of this discovery there have been elaborated and patented effective methods of isolating deuterium and tritium from water. Water ridden of deuterium following the technology of V. Petrik has been studied at scientific in the USA several times.

There have been elaborated effective catalizers for the separation of hydrogen isotopes.

On the initiative of the Russian state corporation "Rosatom" there have been carried out tests of V. Petrik's technology for the disposal of water contaminated with tritium. Following the results of the tests, the Russian government decided to establish an industrial plant for the disposal of 1200 tons of tritium water stored at St. Petersburg. However, in connection with the smear campaign scandal around the project "Pure Water", the financing of founding the plant has been halted.

4. "Regularity in the forming of geometrical spatial many-dimensional structures applying the mathematical algorithm of the golden rule." Diploma No. 168

- On the basis of this discovery V. Petrik reproduced the draft according to which there had been constructed the first violin
- Demonstrated have been new sensational manifestations of the golden rule in the anatomy of man.

V. I. Petrik founded centers of scientific research

1. In 1991 V. Petrik founded the first private scientific research laboratory in postsoviet Russia.
2. In 1997 the first private research institute was established in Russia, the «Scientific Research Institute for the Physics of Fullerenes and New Materials Ltd.», founded by the Russian Academy of Natural Sciences, «Naučpribor» (scientific device) and the natural person V. I. Petrik. As scientific director of the institute V. I. Petrik was elected.
3. In 2007 the second private scientific research center was founded in Russia, the «Scientific Research Center for Supramolecular Systems and Nanotechnologies Ltd.» the founders of which were the United International Institute for Nuclear Research «Dobna», the State International University for Nature, Society and Man and the natural person V. I. Petrik. As scientific director of the institute V. I. Petrik was elected. The production technology for nano-crystalline rhenium developed at the institute was approved by RUSNANO, which decided to finance the construction of a production facility.
4. In 2008 the «Scientific Research Center for Supramolecular Systems and Information Technology Ltd.» was founded in Russia. The institute was founded by V. I. Petrik's company «Holding Golden Formula Ltd.» and the State University of Telecommunications «M. A. Bonč-Bruevič».

In 2009 V. I. Petrik decided to give his scientific discoveries and developed technologies and materials to relevant research institutes of the Russian Academy of Sciences for study and supporting their implementation into production. Symposiums were held with this goal in institutes of the Russian Academy of Sciences, attended by leading scientists and specialists of the country, on the issues:

1. Program: Radiation Safety for Cities of the World

There has been developed electrochemical sorption technology, which provides a solution for the major problem of nuclear engineering, the problem of recycling of liquid radioactive waste products. The technology is based on scientific development in the field of physical chemistry of solutions; it provides highly selective extraction of radioactive elements from solutions and their reliable fixing in solid crystal matrixes. The technology has passed testing successfully, at the leading Russian radiochemical enterprise and industrial complex Mayak in 2007.

Global pollution with tritium is a separate problem in the field of development of nuclear and thermonuclear power engineering. In particular, accumulation of radioactive tritium in heavy hydrogen moderator is the basic constraining reason of large-scale application of nuclear reactors of CANDU type that work on natural uranium, which excludes essentially a possibility of development of uncontrollable chain reaction.

On the basis of the development that has passed already a successful testing in the field of isotopic exchange, based on magnetic isotopic effect, together with the leading Russian experts from Mendeleev University of Chemical Technology and Dollezhal

Research and Design Institute of Electrical Technology, a decision has been made on the creation of experimental installation for tritium removal from heavy water.

2. Program: Uncontaminated Air for Cities of the World

The motor transport gives almost half of all harmful emissions into atmosphere, and in big cities up to 90%. A way to solve the problem consists in enhancement of purity and quality of petrol. At present, general tendency of petrol producers consists in constant expansion of application of additives, in terms of the volume, as well as in terms of nomenclature.

In compliance with the task formulated by the United Russia party, an additive to motor fuels, has been developed on the basis of aromatic hydrocarbons and oxygen-containing compounds, the synthesis of which additive is performed on nano-sized catalysts.

The new additive provides obtainment of petrol grades AI-95, AI-98 and AI-100, it provides an order of magnitude reduction of ecological loading by exhaust gases, and allows the Russian petrol producers to enter the world market.

3. Program of Protection of Medical Products

Protection against imitation of medical products, as well as other objects which are having especially important significance and existing in extended turnover, for example, medical recipes, is one of the main problems of health maintenance of the nation; and the problems of non-authorized manufacture, counterfeit, imitation, re-export, sales of expired products are reasonably attributed to the problems of national security. In Russia, by virtue of significant extent of customs corridors, the absence of express methods for determination of authenticity of commodities at customs points, as well as a number of some other reasons, the problem of import, as well as manufacture of counterfeit medical preparations within the territory of Russia has got the scales of national disaster. One should especially bear in mind, that medical products in terrorists' hands may become a readily available means of bacterial or viral mass destruction.

According to experts, the fraction of counterfeited medical products in the Russian market now approaches 40%.

The offered program of protection of medical products is notable for the fact that protection is provided by the manufacturer of the products, and identification is made directly by consumer himself. For implementation of the program, special anti-Stokes compounds have been developed. Distinctive feature of the developed protective technology is the fact that it has two levels of protective attributes:

- a) Organoleptic, allowing to identify authenticity of protection under field conditions directly by the consumer,
- b) Machine-readable attributes intended for inspecting organizations.

4. Multifunctional Optical Armour Ceramics

At present, there is a marked need for optical materials capable of operating under extreme conditions. Out of the three known, having the required mechanical, thermal and strength properties of optical materials like spinel, sapphire and ALON, only sapphire complies with all the necessary requirements brought to the systems subjected to high aggressive action of the environment. Although sapphire is used already in various devices, it has been the most expensive material, and depending particular application, it has a number of limitations due to its inherent double refraction. Transparent spinel not only outbids sapphire in terms of a number of mechanical properties, e.g., a parameter

as fissuring, but it also possesses better characteristics in UV and near infrared domain of spectrum.

Potential capabilities of polycrystalline spinel caused research in a whole number of organizations and countries during the 60s and 70s of the 20th century.

The production technology has been developed, of optical armour ceramics intended for operation under the conditions of impacts of high mechanical loads and high temperatures and in UV, visible, and IR domains. Synthesis of ceramics is performed by means of hot pressing of nano-crystalline powders obtained using sol-gel method, the powders exhibiting high activity forwards pressing.

5. Technology of Isolation and Separation of Platinum Group Metals

A new complex system has been developed, for isolation and separation of the metals of platinum group. Technological scheme is based on the capability of metals of platinum group under particular conditions, to form volatile compounds with trifluorophosphine with strong difference of their physicochemical properties, which allows evolving platinum metals from mixture having complex composition with subsequent separation as per temperature gradient and obtainment in the form of metals having purity of higher than 99.99%. The given technology is applicable for processing of concentrates of platinum metals, secondary raw materials and anthropogenic raw materials.

The carried out demonstration tests on concentrate KP-2 provided by Norilsky Nikel has shown the possibility of practically entire isolation of platinum metals from the mixture of complex composition with their further separation and obtainment in the form of metals or nano-sized powders having purity exceeding 99.99%.

The application domain of the technology is boundless.

6. Solar Power Engineering: Gas-Phase Fluorosilane Technology for Silicon Production

Solar power engineering is one of the most dynamically developing domains of industry. In the future, solar electricity would become predominating source of energy in the world. The stake on the solar photo-power-engineering as absolutely safe and inexhaustible source of energy, the Sun, will be regarded as sure and leaving no alternative choice of the mankind. Technology of production of semiconductor silicon existing today was elaborated in the 50s of last century, by the experts of Siemens Company (Siemens-process). In the production of polycrystalline silicon as per the given technology, highly toxic and dangerously explosive substances are used: chlorine, hydrogen, hydrogen chloride, trichloride silane. In addition, obtainment of silicon using such a technology is associated with high energy consumption: 360–400 kW h/kg¹, which actually determines the cost of final product. The listed factors form reasons for existence of the "silicon problem".

During several last years we elaborated new gas-phase fluorosilane technology for obtainment of semiconductor silicon, including for solar power engineering. The technology is based on the use of cheap accessible raw material (specific factory waste). The waste contains silicon in the composition, in the form of fluorides, i.e., fluosilicates. Transfer of solar power engineering to nano-crystalline and monocrystal silicon obtained through monosilane based on the developed technology provides reduction of cost to 40\$/m²; whereas the cost of generated energy can be lowered to 10¢/kW·h. Especially important advantage of the technological process is the closure of the technological cycle (absence of the products subject to recycling, and absence of harmful emissions).

7. Solar Batteries on the Base of Photochemical Systems with Nano-Oxide Semiconductor Materials

At present, in the experimental laboratory conditions, improvement of the basic technological phases of production, manufacturing and tests of pilot models of the elements which working principle is based on oxidation-reduction processes is carried out.

The base of photosensitive layer of such elements is formed by nano particles of wide zone oxide semiconductor material of the type of titanium oxide, or zirconium oxide precipitated with the help of gas-phase method, and modified using organic dye of the type of bipyridile complex of ruthenium. Formation of photosensitive basis and active catalytic layer of platinum on counter electrode with the help of the developed gas-phase method reduce dramatically the cost price of photo cell and provide obtainment of electric power with cost less than 0.1\$/kW.

8. Manufacturing Technologies for Production of Nano-Carbonic Materials, in Particular Grafenes, and Technology Based on It

Today, the future of nano-technology in many respects is associated with grafenes—the next stage after fullerene, and nano-pipes experimentally discovered allotropic form of carbon. Grafenes are 2-dimensional carbon crystals; they show record characteristics in the parameters like heat conductivity, specific resistance, mobility of electrons and so forth.

An industrial production technology of grafenes has been elaborated, using the method of cold destruction. The technical solution of the method consists in that the interlayer spaces of graphite structures are occupied by highly reactionary chemical compounds capable under external influence (photochemical, mechanical, chemical, etc.) of exothermal explosion-like decomposition with subsequent initiation of auto-catalytic process of disintegration of the composition. The gaseous products of disintegration of chemical compound formed in the interlayer spaces destroy the carbon matrix with formation of individual 2-dimensional carbon clusters, i.e., grafenes.

9. Industrial Production of Nano-sized Metallic Powders

Operating industrial production has been created, of nano-sized powders of various metals with the help of electro-explosive, gas-phase, plasma, sol-gel methods. At present, nano-powders of the following metals are produced: platinum, palladium, ruthenium, rhodium, rhenium, nickel, iron, tungsten, molybdenum.

10. Program: Alpha-Emitting Preparations for Nuclear Medicine

One of radical methods in treatment of malignant formations is therapy with the use of radioactive nuclides.

However, β -radiating nuclides used today in nuclear medicine, have low radio therapeutic efficiency, and collateral evidence of destroying influence on the organism of patient. Considerable changes within the opportunities of radiotherapy in the field of treatment of oncologic diseases would be provided using α -radiating radio-nuclides.

At present, with the minimum quantities of reactor Ra-223 available for radiologists, extremely high therapeutic efficiency of its application in therapy of the most widespread forms of cancer has been shown for prostate gland, breast, bone metastasis; anti-neoplastic influence on cells of pathological centres, relief of pain syndrome, with palliative therapy of bone metastasizes, increase in life expectancy, decrease of the risk of fatal outcome with minimal general toxicity and minimal defeat of marrow (as against the radio-nuclides β -radiators Sr-89, Sm-153, Re-186, Sn-117, used for the same purpose).

The international community based on the totality of nuclear-physical characteristics and therapeutic properties, has suggested the coordinated theoretical list consisting of six most effective radio-nuclides, α -radiators (At-211, Tb-149, Bi-212, Bi-213, Ac-225, Ra-223), the last four of which can be obtained by means of irradiation of natural ^{226}Ra in a nuclear reactor. However, at present, the prospect of commercial production only has ^{223}Ra , isolated from ^{227}Ac , the product of irradiation of ^{226}Ra . It has been historically developed so that practically the entire world reserve (about 1.5kg) is located in, and belongs to Russia. Out of that, 74 grams of ^{226}Ra in the 60s of last century were irradiated in a reactor. Russia is also possessed of the necessary industrial and technological facilities (reactors, technological infrastructure of nuclear and research centres). There are the developments supposing an opportunity of addressed delivery of the preparation directly into the area of malignant formation.

11. Low-Temperature Thermo-emission Converter

An experimental low-temperature thermo-photo-converter was demonstrated, which generated electromotive force due to thermal excitation within the range of temperatures of 5°C – 50°C . The emitter in such an element was a plate pressed from grafenes having anomalous low photoelectric work function. For the electrolyte with a low potential barrier ionic liquids were used, and for the base of counter electrode, the metal was used, from the group: aluminium, titanium, hafnium, zirconium, niobium, tantalum or molybdenum, coated with a metal of platinoid group. A multiple increase of electromotive force was demonstrated as a result of heating of the element using domestic fan heater.

As result of the last symposium, which took place at the scientific research institute of General and Inorganic Chemistry of the Russian Academy of Sciences, 24 participants of the symposium, among them 14 academicians of the Russian Academy of Sciences, including Vice-President of RAS S. Aldoshina and Vice-President of the RAS K. Solntseva, signed the resolution:

«Over the course of the speaker's statement a lot of questions arose, all of which were answered satisfactory. **V. I. Petrik's discoveries are of significant scientific interest. Task groups shall be organised at the corresponding institutes for scientific support of the above inventions and technology**».

Then a delegation of leading academicians of RAS headed by the Vice - President of the Russian Academy of Sciences S. Aldoshin acquainted with the practical results of discoveries and inventions directly V. Petrik its laboratories. Work has been given the highest evaluation.

On January 27, 2013, leading scientists from Germany, France, Switzerland, Italy, Austria, Poland arrived in laboratrii W. Petrick to explore his discoveries and inventions.

Abstract from findings of leading European scientists:

«His inventions may have substantial effect in practical and academician spheres». «Delegation also stressed that Petrik's inventions may have important commercial value and powerful economic effect. European delegation expressed interest to set up co-operation for a number of Petrik's inventions and for further application of these results in numerous sectors of European industry».

On March 12 2013, a delegation of scientists and industry leaders from China visited V.I.Petrik laboratories.

Findings made by Chinese delegation indicate:

“Delegation members made a conclusion that reviewed technologies represent crucial interest for Chinese industry and science. Relevant reports will be made for the Government of China based on results of some studies performed by Mr. Petrik”.

22 July 2013 till 29 July 2013 Laboratory V. Petrik visited the Indian delegation of scientists led by a leading scientist of India Dr. Vijay P. Bhatkar.

In conclusion, Indian scientists says:

“In summary, we feel that the inventions and innovations of Prof. Petrik are significant and relevant to India. These innovations can be further developed and harnessed through joint scientific, technological and industrial collaborations”.

V. I. Petrik's scientific and technical developments protected by patents:

1. Patent RU №2163883, «Method of industrial production of highly reactive carbon mixture by cold destruction and device for its implementation».
2. Patent RU №2163840, «Method of purifying water, and/or water surfaces, and/or hard surfaces from crude oil, petroleum and other hydrocarbon pollutants».
3. Patent RU №2123086 «Method of collecting spilled crude oil and petroleum in water and at land».
4. Patent RU № 2128624 «Method for obtaining highly reactive carbon mixture and device for its implementation».
5. Patent RU №2184086 «Method for removing of crude oil, petroleum and/or chemical pollutants from liquid and/or gas and/or surface».
6. European patent № EP1247856, «Method for removing of crude oil, petroleum and/or chemical pollutants from liquid and/or gas and/or surface».
Effective in 36 countries.
7. US patent US 7, 128, 881 B2 «Configurations and methods of water purification».
8. US patent US 2003/0024884 A1 «Method for removing of crude oil, petroleum and/or chemical pollutants from liquid and/or gas and/or surface».
9. US patent US 7,842,271 B2, “Mass production of carbon nanostructures».
10. Patent RU № 2039104 «Method of extraction of metallic radiogenic Osmium - 187 out of rhenium-containing poor and ultrapoor ores».
11. Patent RU № 2074469 «Method of creating a population inversion of nuclear levels in the material of the active medium gamma-ray laser».
12. Patent RU №2074420 «Method of protection against forgery of banknotes,

- securities stocks, bonds and documents».
13. Patent RU №2061769 «Method of extracting osmium from acidic solutions».
 14. Patent RU №2086969 «Method of registration of Osmium - 187 isotope».
 15. Patent RU №2086968 «Device for the registration of Osmium -187».
 16. Patent RU № 2035434 «Method of manufacturing an artificial aluminum-magnesium spinel».
 17. Patent RU №2036185 «Method of manufacturing an artificial spinel».
 18. Patent RU №2154803 «Method of destruction of chemical and biological weapons (CBW)».
 19. Patent RU №2128484 «Condom protected from the human immunodeficiency virus (HIV)».
 20. Patent RU №2085484 «Method and device for the production of fullerenes».
 21. Patent RU №2086503 «Method of industrial production of fullerenes».
 22. Patent RU №2086715 « Method of manufacturing artificial selait (Magnesium fluoride MgF₂)».
 23. Patent RU №2109682 «Method for industrial production of fullerenes through pyrolysis».
 24. Patent RU №2168109 «Method of signal lighting of runways and landing sites at night and in poor visibility».
 25. Patent RU №2137612 «Method of identification and protection of excise stamps, banknotes, securities, stocks, bonds, documents and produce as well as a hidden image data carrier as identification and protection mark».
 26. Patent RU № 2150749 «Means of protecting securities, stocks, bonds and other documents against forgery».
 27. Patent RU № 2151781 «Filler for caoutchouk, rubber and other elastomers».
 28. Patent RU №2156491 «Method of protecting and identifying holograms».
 29. Patent RU №2070772 «Method and means of protecting securities, stocks, bonds and other documents».
 30. Patent RU №2161427 «Filter material for cigarettes».
 31. Patent RU №2179881 «Matrix converter for emissions of internal combustion engines and production method».
 32. Patent RU №2199350 «Method of curing skin diseases characterized by secretion and device for its implementation».
 33. Patent RU №2199351 «Method for purification of blood plasma from uric acid and creatinine».
 34. Patent RU №2200092 «Nanoporous metalcarbon composite and production method».
 35. Patent RU №2201463 «Method for selective extraction of platinum group metals from the gas phase and device for its implementation».
 36. Patent RU №2211251 «Method for selective extraction of precious and platinum group metals from anode sludge».
 37. Patent RU №2211251 «Method for selective extraction of platinum group metals from anode sludge».
 38. Patent RU №2341860 «Method and device for transferring electrical energy».
 39. Patent RU № 2345430 «Method for the purification of liquid radioactive waste».
 40. Patent for a useful model RU №22476 «Water purifying filter».

The Industrial Production of Graphenes by Method of Cold Destruction of Layered Carbon Bonds.

The phenomenon of the formation of two-dimensional carbon crystals and nano-sized carcass structures during cold destruction of layered carbon bonds was discovered. A chemical bond capable of explosive decay while in the interlayer space of a carbon matrix with subsequent initiation of an autocatalytic process of bond decay was developed. Special admixtures that provide control over the flow of the chain reaction (negative and positive catalysis) were also developed. The dependency of the formation of various carbon structures on the regime of reaction flow was established.

The discovery was ratified by the International Association of Authors of Scientific Discoveries 19.2. 2001 года. Diploma №163, priority registered as of 17. 10. 1997, Diploma №163.

The carbon material derived by method of cold destruction of layered carbon bonds mostly composed of graphenes received the name "Highly reactive carbon mixture (HRCM or USVR)".

The method of producing USVR and its applications have been patented by 50 countries in the world, including USA:

"Mass production of carbon nanostructures 2 US 7,842,271 B2 30/11/2010, filed 12. 7, 2004

"Method for removing oil, petroleum products and/or chemical, pollutants from liquid and/or gas and/or surface US 2003/0024884A1 06/02/2003"

"Configuration and methods for water purification БЭ - US 7,128,881 B2 31/10/2006"

This technical solution assumes that chemical compounds of high reaction ability are inserted into inter-layer spaces of stratified carbon compounds, which are capable, under external effects (photochemical, mechanical, chemical, etc.) to produce explosion-like disintegration with subsequent initiation of auto catalytic process of compound disintegration. Gaseous products of chemical compound disintegration emitted in inter-layer spaces destroy carbon matrix producing individual two-dimensional carbon molecules, which structure is complementary to structure of graphite basal plane.



The cold method of graphene production in pictures (1997).

<http://youtu.be/WAcgwIHeBIM>



The process of cold destruction of graphite demonstrated by Major-General Evdokimov, Vice-Director of the State Technical Commission for the President the Russian Federation (1998).



Academics at the Russian Academy of Sciences study the cold destruction of graphite process. <http://youtu.be/eX7EKiGnTP0>

The cold destruction of graphite demonstrated by its author: http://youtu.be/Z7GG-0_bwaM

The cold method of industrially producing graphenes in one's hand (black snow) demonstrated by its author:

<http://youtu.be/Xk5BKaN4vK4>

Graphene produced by infants:

<http://youtu.be/f5KyBVGk4YQ>

Professor Sue from USA demonstrates the cold method of graphene production.

<https://www.youtube.com/watch?v=WHWKQAI3Eg>

American scientists become acquainted with the technology of cold destruction of graphite <http://www.youtube.com/watch?v=7Gq2Faqpulo>

TV Channel BOT <http://youtu.be/OJeW6h3cMas>

In 1998 Institute of Criminology under the FSS of Russia under the guidance of the Institute Director, Ph.D. of physics & mathematics, major general A.V.Fesenko completed

systematic research of carbon mixture of high reaction ability received by cold destruction of stratified carbon compounds according to technology invented by V.I.Petrik. B

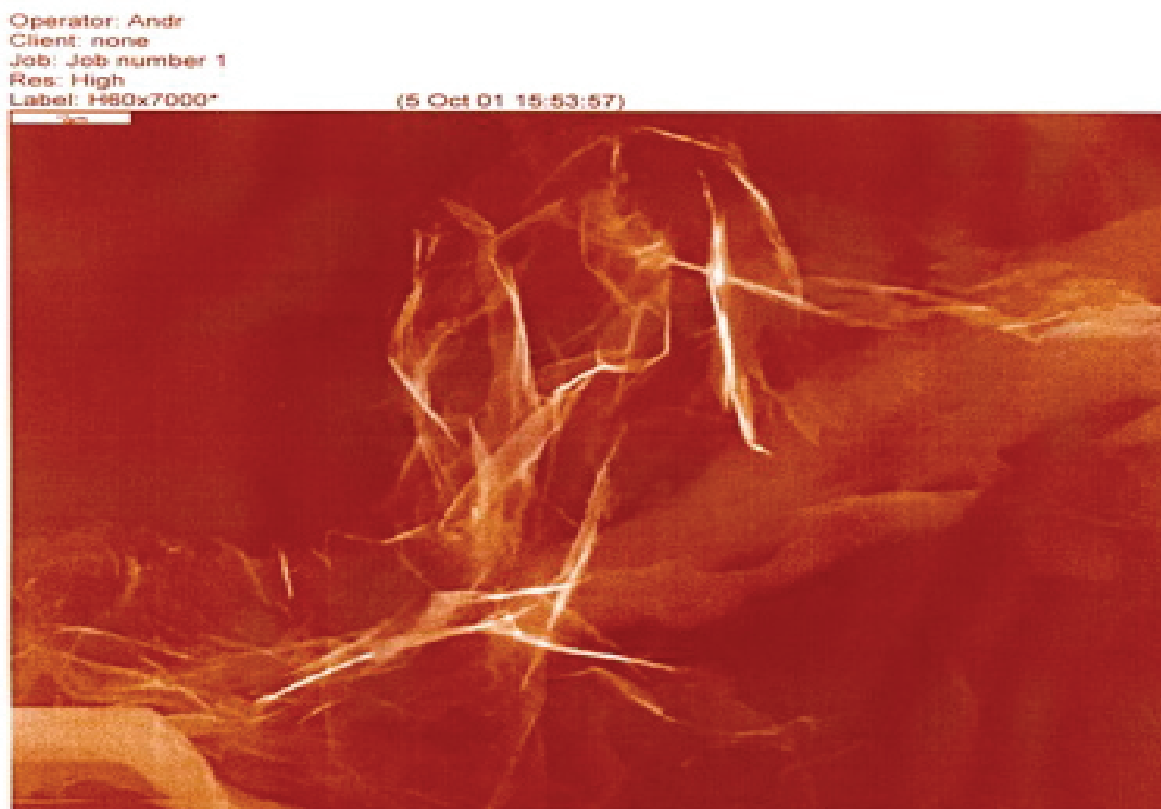
At the time this was the most responsible, well-equipped and competent scientific center in Russia.

The conclusion signed by A. V. Fesenko states:

“Detailed investigations have shown that the atomic layers comprising HRCM separated from crystalline graphite are rarely encountered in the form of a regular plane. Apparently under the action of various factors related to the technology of destruction of crystalline graphite they get deformed and generate complicated geometric shapes. Carbon atoms on the external boundary of solitary graphite layers are not saturated in terms of coordination and, therefore, as a result of action of intermolecular forces, they are capable to generate aggregates.

So HRCM is a homogenous carbon mass consisting of graphenes, i.e. planar elements of graphite structure, graphite packets as well as products of their chaotic bonding”.

<http://vpetrik.com/userfiles/docs/HRCM/Zakluchenie%20Fesenko%20ENG%20NEW.pdf>



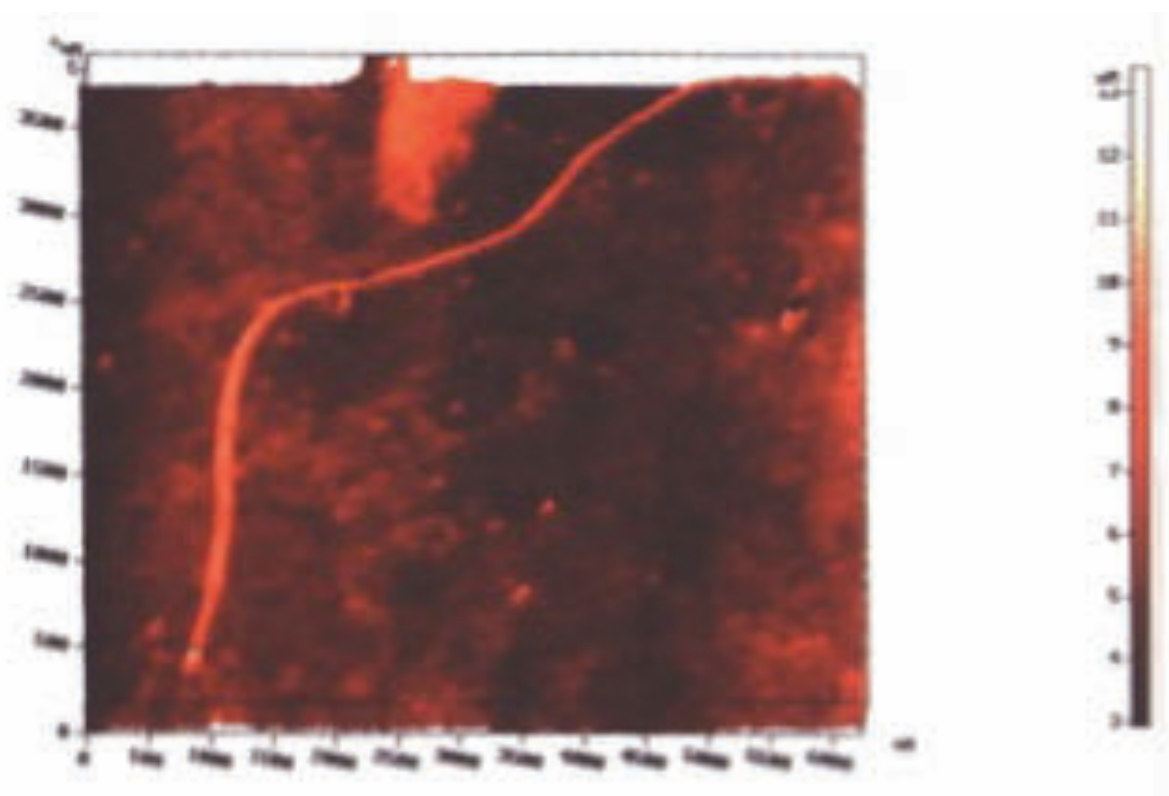
This is the first photograph of an HRCM, made through the method of cold destruction of graphite.

In this manner it was confirmed that the technology for the cold destruction of graphite and the production of graphene in industrial quantities was created.

Let us remind you, dear readers, that this was during the years in which world science was captivated by the carbon nanotubes discovered by Ijima.

One of nanotube structure specific features restricting research opportunities, when using graphite electric-arc evaporation assumes that nanotube ends, normally, are closed by carbon formations of pentagonal and heptagonal structure. Technologies for destruction of such structures by chemical oxidizing are labor-consuming and, normally, result in damages of nanotube topology due to poorly controlled process. During development of technology for destruction of stratified carbon compounds we put forward a hypothesis, which says that free graphene planes are capable, in accordance with the most favorable state from energy point of view, to form graphene clusters (flat batches, consisting of several graphenes), to roll into scrolls and cylinders, with closing of free valence and forming of carbon nanotubes with opened ends.

This hypothesis was confirmed in 1999 – 2001 by research efforts in the Moscow State Institute of Electronics and RI NII of Criminology under FSS of Russia. Thus, topographic investigation of HRCM samples were conducted under the guidance of V.K.Nevolin, Ph.D. of physics & mathematics, faculty dean, using atomic & power microscope Solver P-47 of NT Company and images of nanotubes with opened ends were received for the first time.



In 2000 the atom-power microscope Solver P-47 of the NT company was the first to make images of carbon tubes with open end, made as a result of the deformation of graphene.

In the process of HRCM systematic research activity in the Moscow State Institute of Electronics and research institute NII of Criminology under the FSS of Russia, it was defined that formation of web type carbon nanostructures entirely depends on HRCM production modes. It was proved that web type carbon formations in the form of nanotubes, nanorings, different fractal formations are detected in HRCM if that graphite destruction goes in a mode of self-accelerating branching chain reaction with thermal auto generation.



Carbon nanotubes of various diameters made from graphenes.

<http://vpetrik.com/userfiles/docs/Graphenes/FSB%20Univercity%20photos.rar>

Following the analysis of this new carbon material, the possibilities of its implementation in various fields of science and technology, including military, resulted in the Institute of Criminology of the FSS of the Russian Federation assuming control over all my subsequent work.

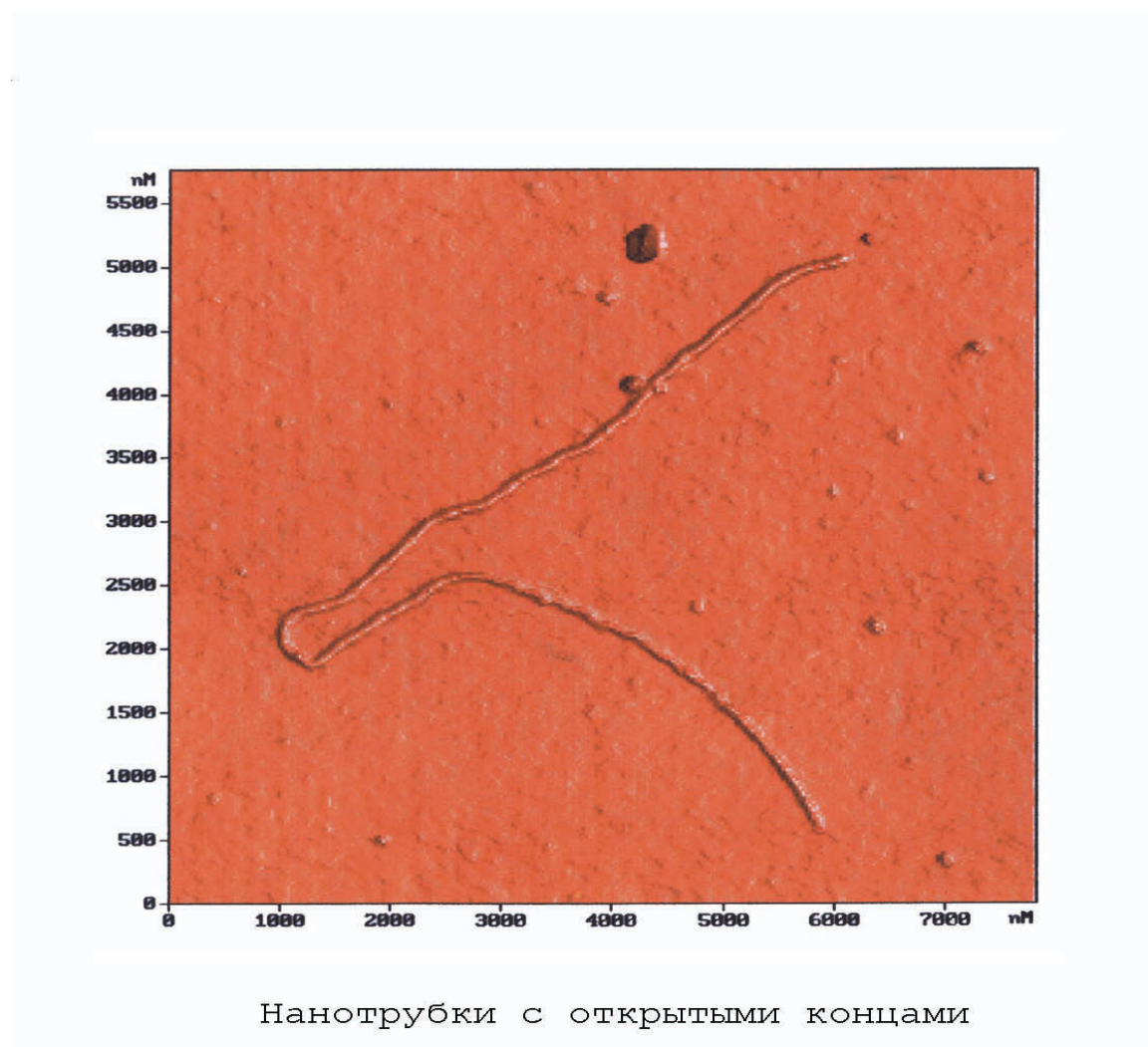
<http://youtu.be/0fZVSJD1tHs>

By that time our graphenes were already participating in military action in Chechnya.

<http://youtu.be/vl3EcyMmLWc>

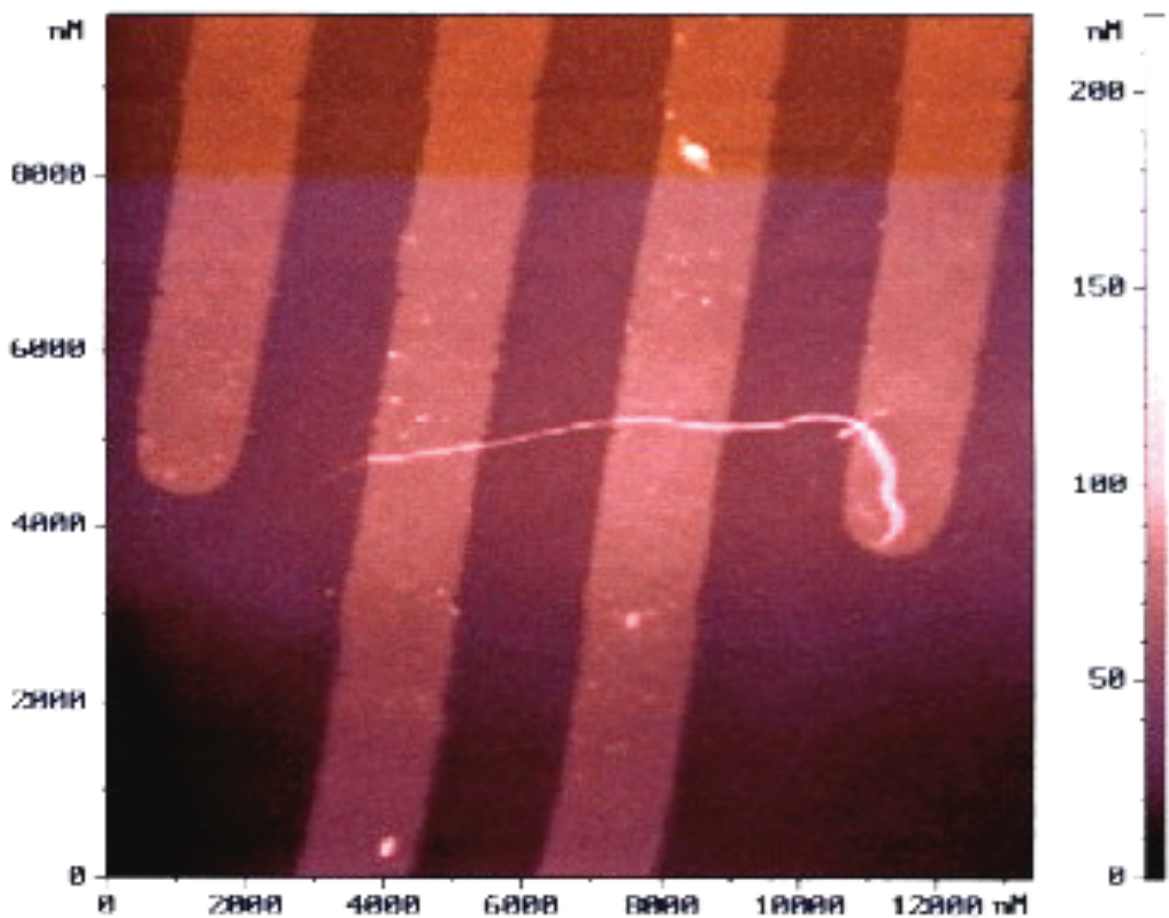
<http://youtu.be/fDuer9-1FKo>

In 2000 I handed the investigation of HRCM over to the Moscow State University of Electronic Technology. The material for investigation was received by Professor V. K. Nevolin, Department Head and Doctor of Physical and Mathematical Sciences. Under his direction unique investigations on HRCM were carried out; previously-unknown single-walled nanotubes with open ends, branching nanotubes, nanorings and nanofractal structures were observed.

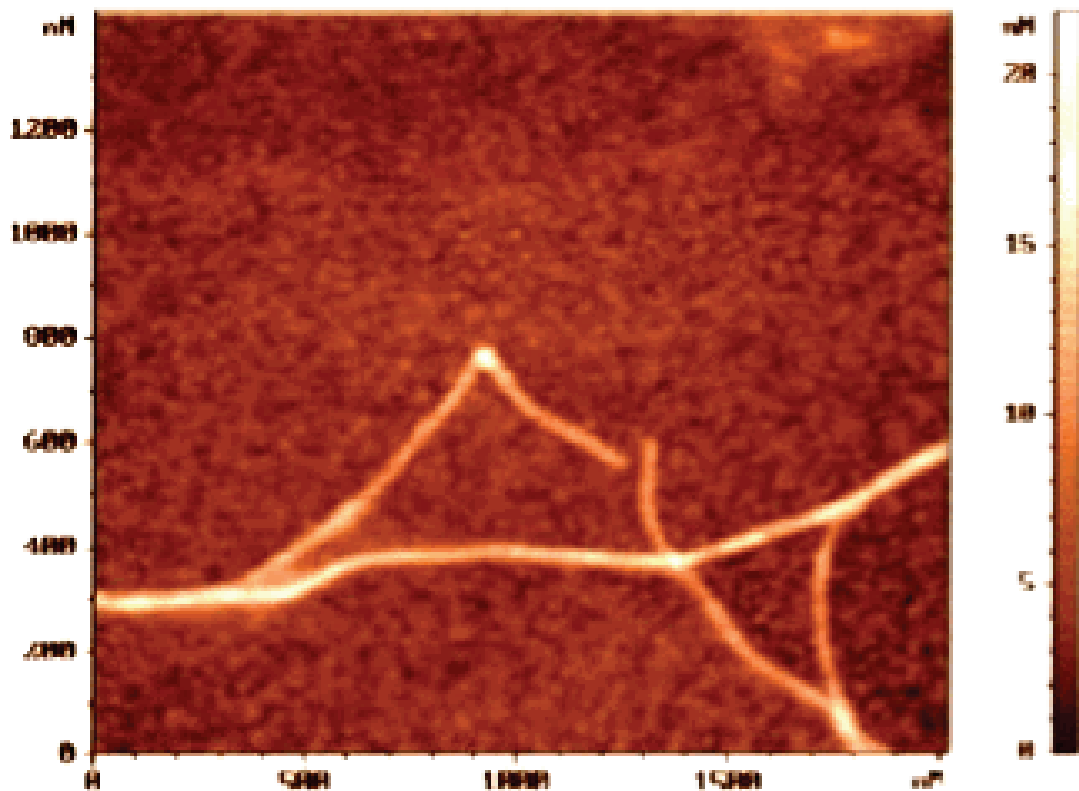


Nanotubes from HRCM with open ends.

Results of investigations in the Moscow State Institute of Electronics were published in 2001 on All-Russia Scientific & Engineering conference "Micro- and nano engineering-2001" with participation of foreign scientists. During several years, multiple investigations were conducted in the Institute for identification of various carbon nanotube properties using HRCM material. In particular, unique data was received during investigations, in terms of nanotube conductivity with platinum coat by technology of gas- phase coating of nanosize materials by metals of platinum group Investigation results were published in scientific journals and papers.



In addition to nanotubes with opened ends, as a result of further investigations in 2000-2002 in the Moscow State Institute of Electronics it was revealed that HRCM includes previously unknown other web type carbon structures: branching carbon nanotubes, nanorings and nanofractals.



As a result of cold destruction of graphite, branching carbon nanotubes were seen for the first time.

<http://vpetrik.com/userfiles/docs/Graphenes/Nevolin%20photos%20.rar>

Together with the employees of the Moscow Institute of Electronic Technology a series of articles on the electronic properties of various carbon carcass structures made from graphenes was published between 2000 and 2003. For the first time ever, separate and undeformed graphenes were observed.

From V. K. Nevolin's article: «**HRCM – a Unique Material for Water Purification and the Advancement of New Technology**»

«With the help of atom-power microscopes over a period of a year and a half of work we observed with confidence only a few times free sheets with a width of 0.3 nanometers lying on electrodes. This again confirms the fact known to us in theory that the slightest disturbance of a free graphene sheet must lead to a change in the flat surface – for example, rolling into a scroll, as can be observed in HRCM.».

«Flat packets from several graphene sheets already possess elasticity and conserve their structure after appearing, Fig. 4. Work with such packets of graphene sheets is significantly simpler, Fig. 6, and they're also quite unique in their electronic properties.

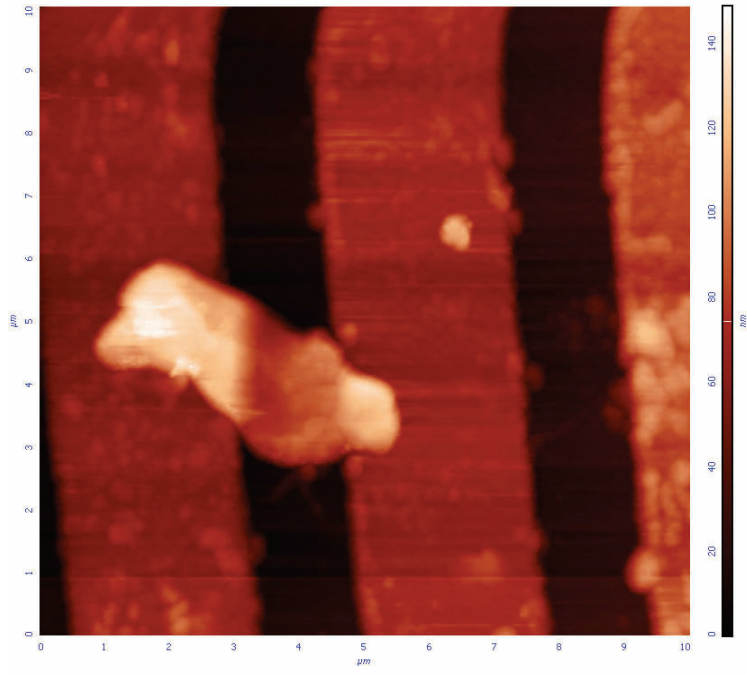


Figure 6- A graphene packet lying between two gold electrodes. Atom-power microscope.

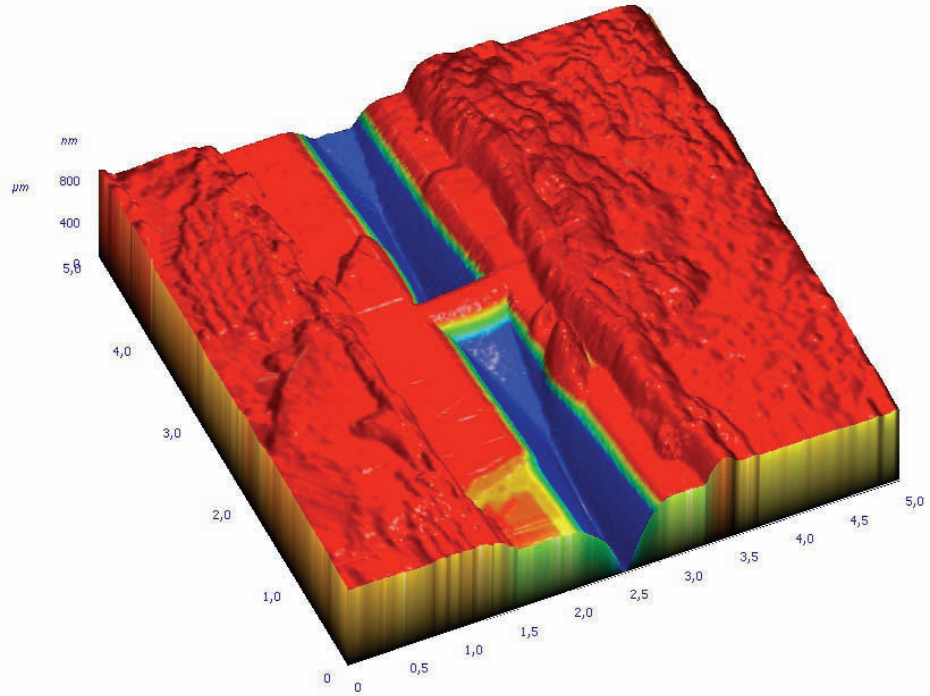


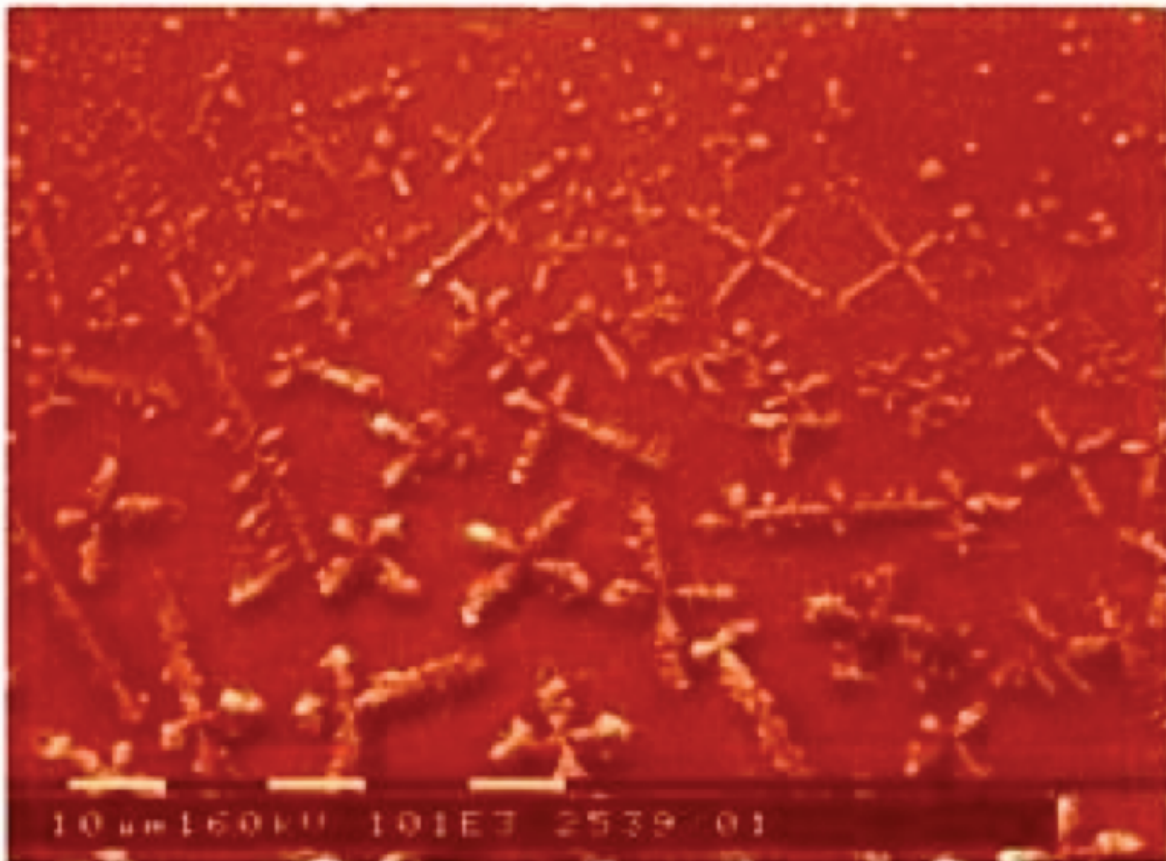
Figure 7 – Dual-electrode device with modified graphene packets.

With the help of an ion cannon a narrow path was cut out of the graphene packet. The width of the created path is 100 nm. The element demonstrates non-linear volt-ampere characteristics, among them highly sensitive sensors.

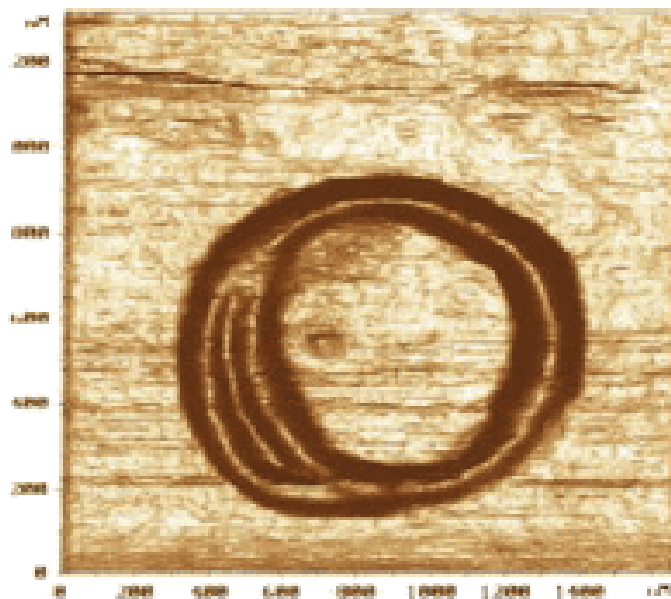
In this manner, as a result of investigations made over more than six years, the main structural elements of a carbon composite made from HRCM have been proven. The uniqueness of this material allows us to advance new nanotechnology and significantly widen the range of possible applications”.

<http://vpetrik.com/userfiles/docs/Nevolin%20articles/Nevolin%20Articles.rar>

Over the course of the investigation it was demonstrated that the thermic treatment of a carbon mass (HRCM) in the presence of nanopowders of iron sharply initiates the formation of graphenes and graphite packets of various carcass formations. Among them very exotic ones.



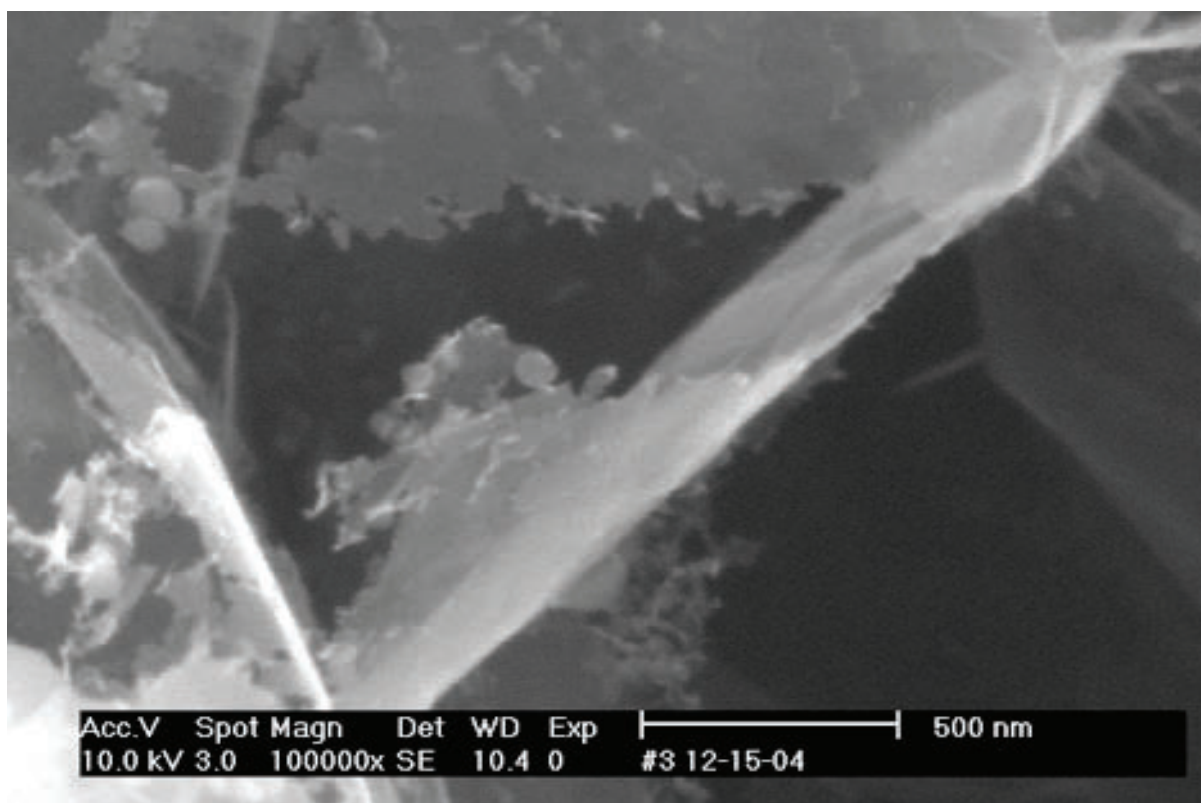
Carbon nanofractals extracted as a result of thermally processing HRCM.



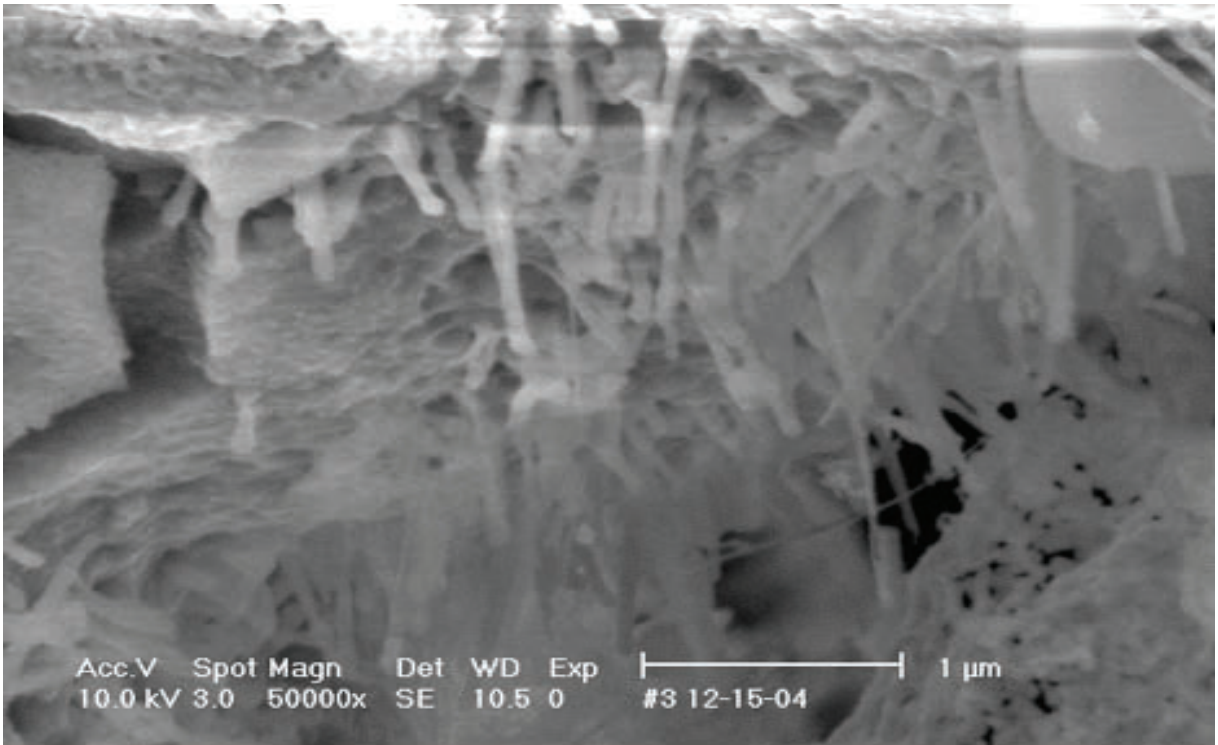
Carbon nanotubes from graphenes.

<http://vpetrik.com/userfiles/docs/Nevolin%20articles/Nevolin%20Articles.rar>

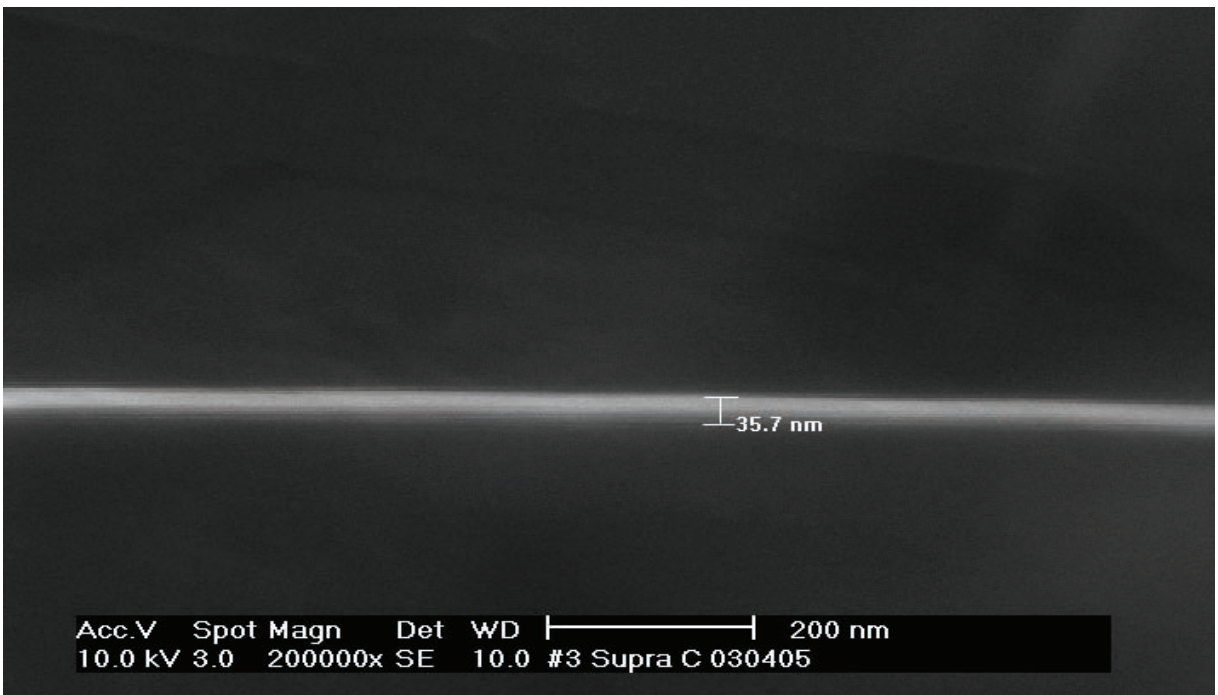
Later, photographs of similar formations were taken in the University of California, Irvine (USA), Wen-AnChiou, Ph.D. professor 2004 r



Graphenes in scrolls, extracted from HRCM



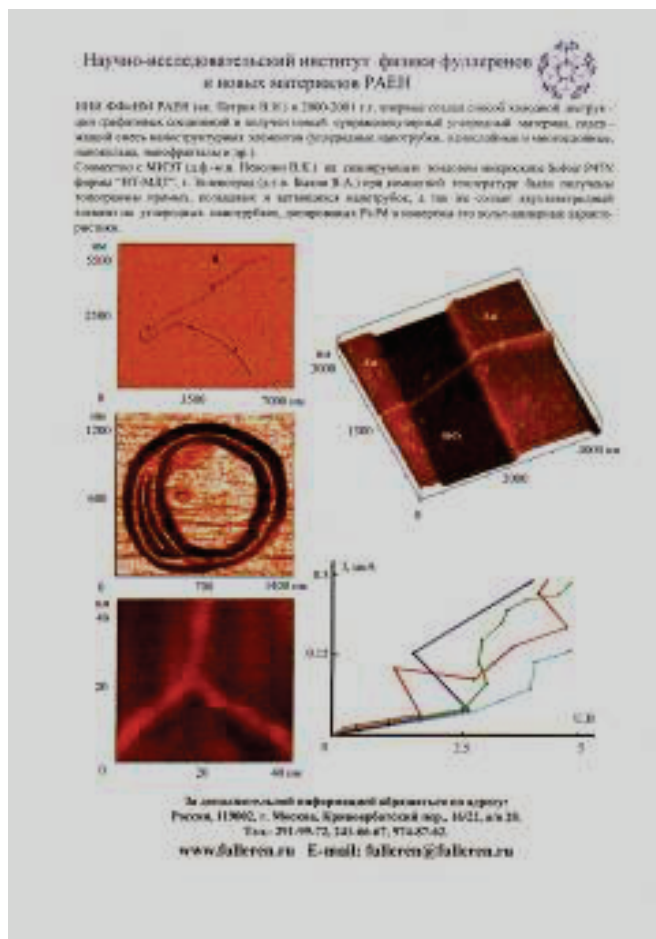
HRCM nanotubes



HRCM nanotubes

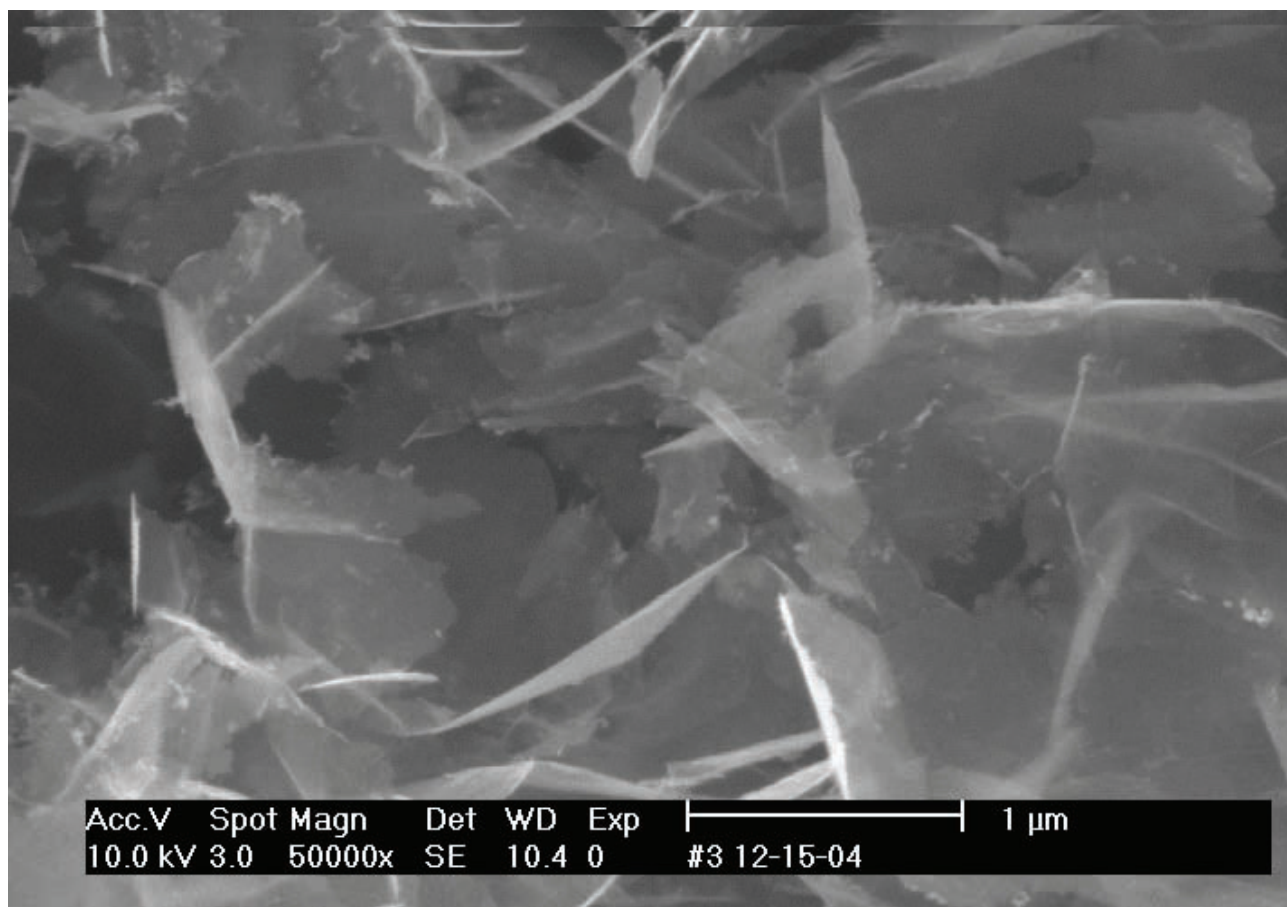
<http://vpetrik.com/userfiles/docs/Graphenes/irvine.pdf>

In 2002 some of these formations were published in the Russian edition of P. Harris' book.



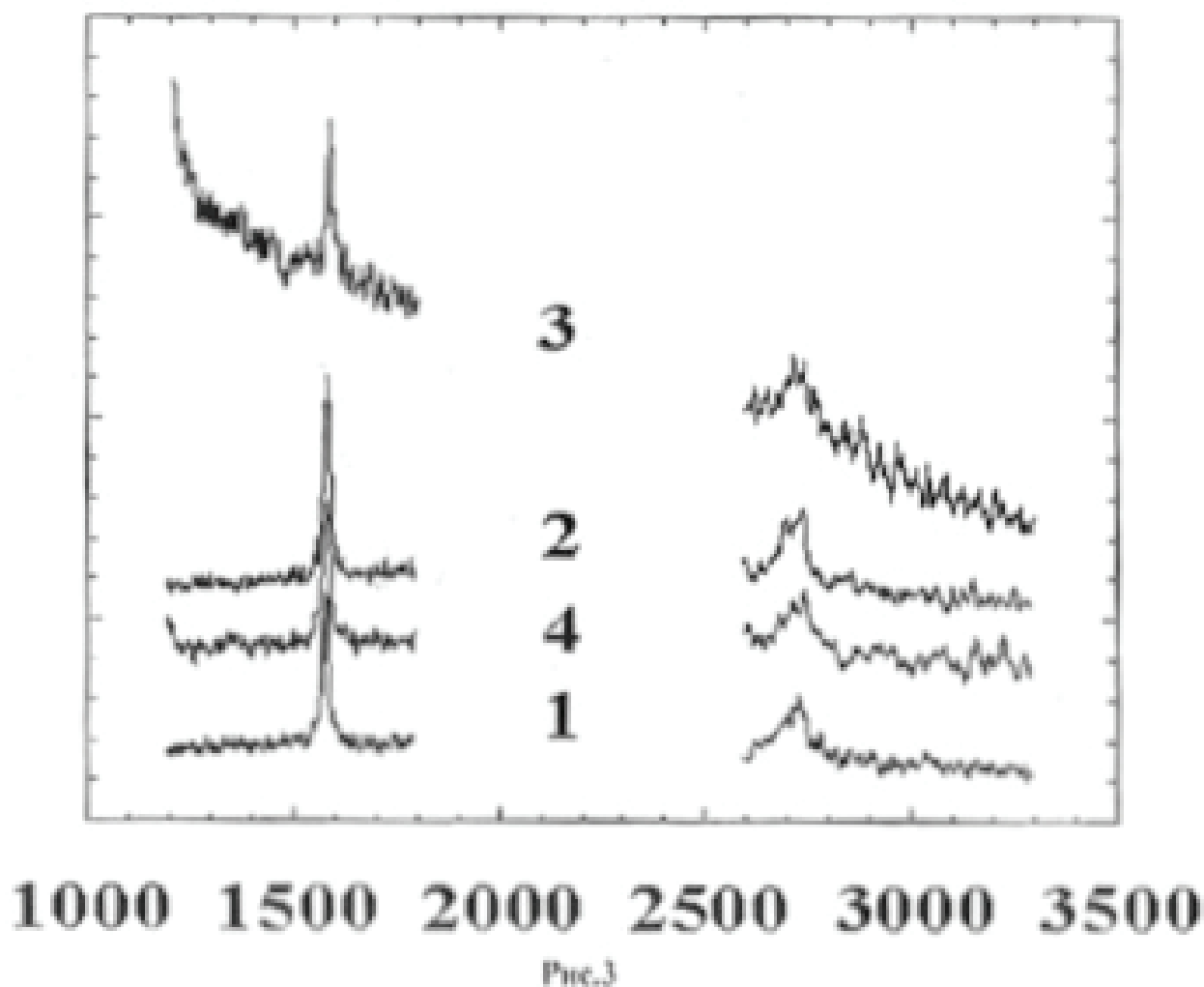
P. Harris' book, 2002

Special chemical compounds depressing reaction of Cl₂O₇ auto catalytic disintegration were developed for industrial production of carbon mixture containing graphenes and graphene complexes, also providing maintaining of temperatures within reaction zone close to room temperature values. Inhibiting action of such compounds on chain reactions is reduced, in majority of cases, to degradation of chains stipulated by destruction of active centers, thus leading to strongly delayed branching and slow reaction rate.



For the first time, difference in degree of USVR and thermally expanded graphite destruction were demonstrated in investigation of spectrums for these materials on 07. 02. 2000 in the Institute of Spectroscopy under the RAS, as well as investigations in Research Institute NII of criminology of FSS of Russia.

“Spectrums of thermally expanded graphite were investigated using traditional method of OAO Gazprom, (test sample No.1), ITC Orgenergoengineering ()test sample No.2), thermally expanded graphite produced by resistive heating in ZAO NII of fullerene and new material physics under the RAS using method invented by V.I.Petrik (test sample No.4) and carbon mixture of high reaction ability (USVR) in ZAO NIIF&NM RAEN (test sample No.3).



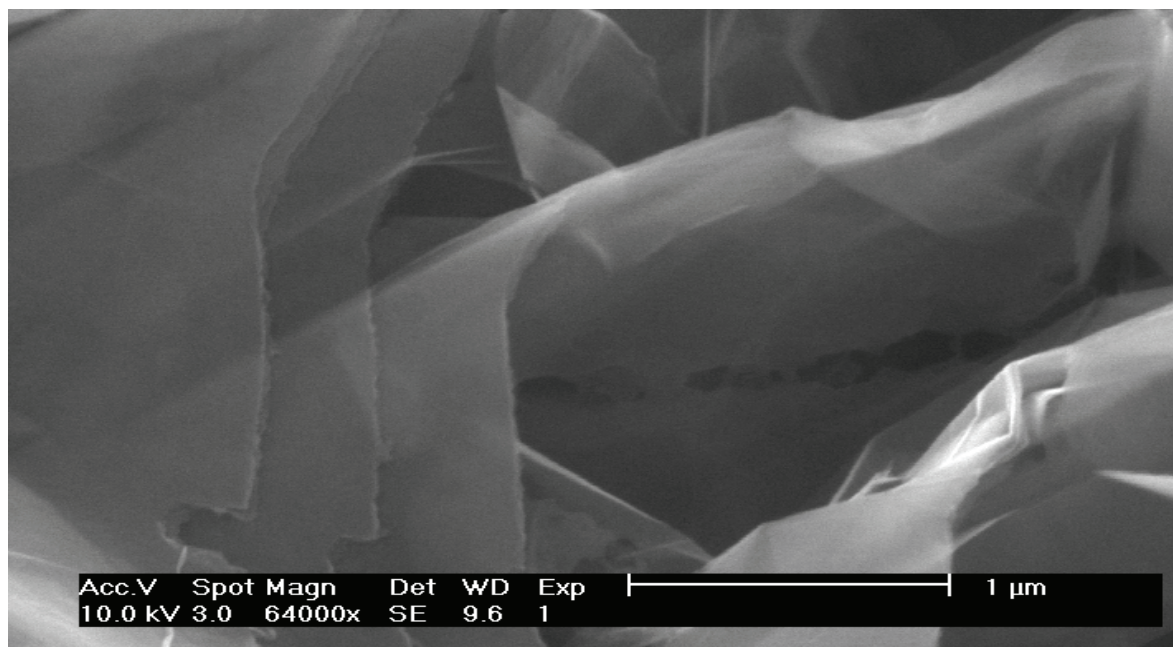
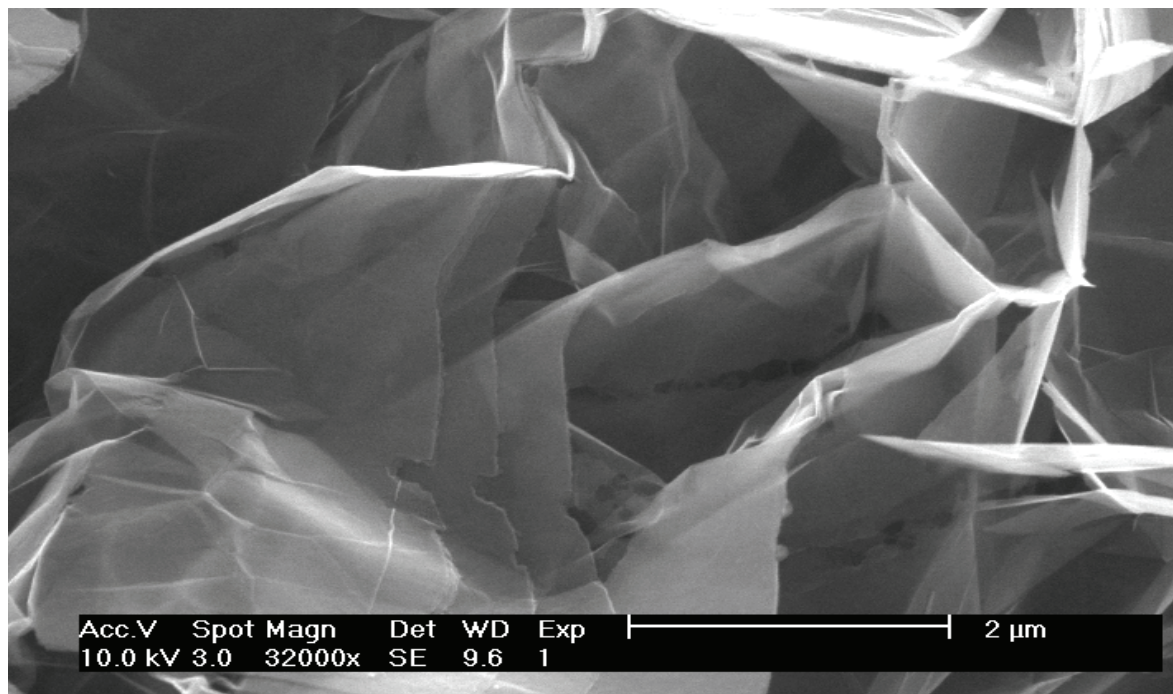
Summary of Institute of Spectroscopy under the RAS indicates:

“According to experts’ opinion, results of completed tests demonstrate that “Samples contain microcrystals of graphite. Perfectness of microcrystals is different. Test sample No.3 revealed the least by size and less perfect microcrystals. In addition this test sample is more irregular versus other test samples; moreover, irregularity is also revealed in perfectness of microcrystals. It may assumed that test sample No.3 includes carbon nanocrystals in the form of individual carbon layers”. (5)

<http://vpetrik.com/userfiles/docs/Graphenes/Spectroscopy%20eng%20rus.pdf>

Investigations of HRCM were carried out in many scientific centers all over the world.

University of California, Davis 2004 r.



Here is the curious evolution of one extracted graphite particle until the end of its deconstruction.

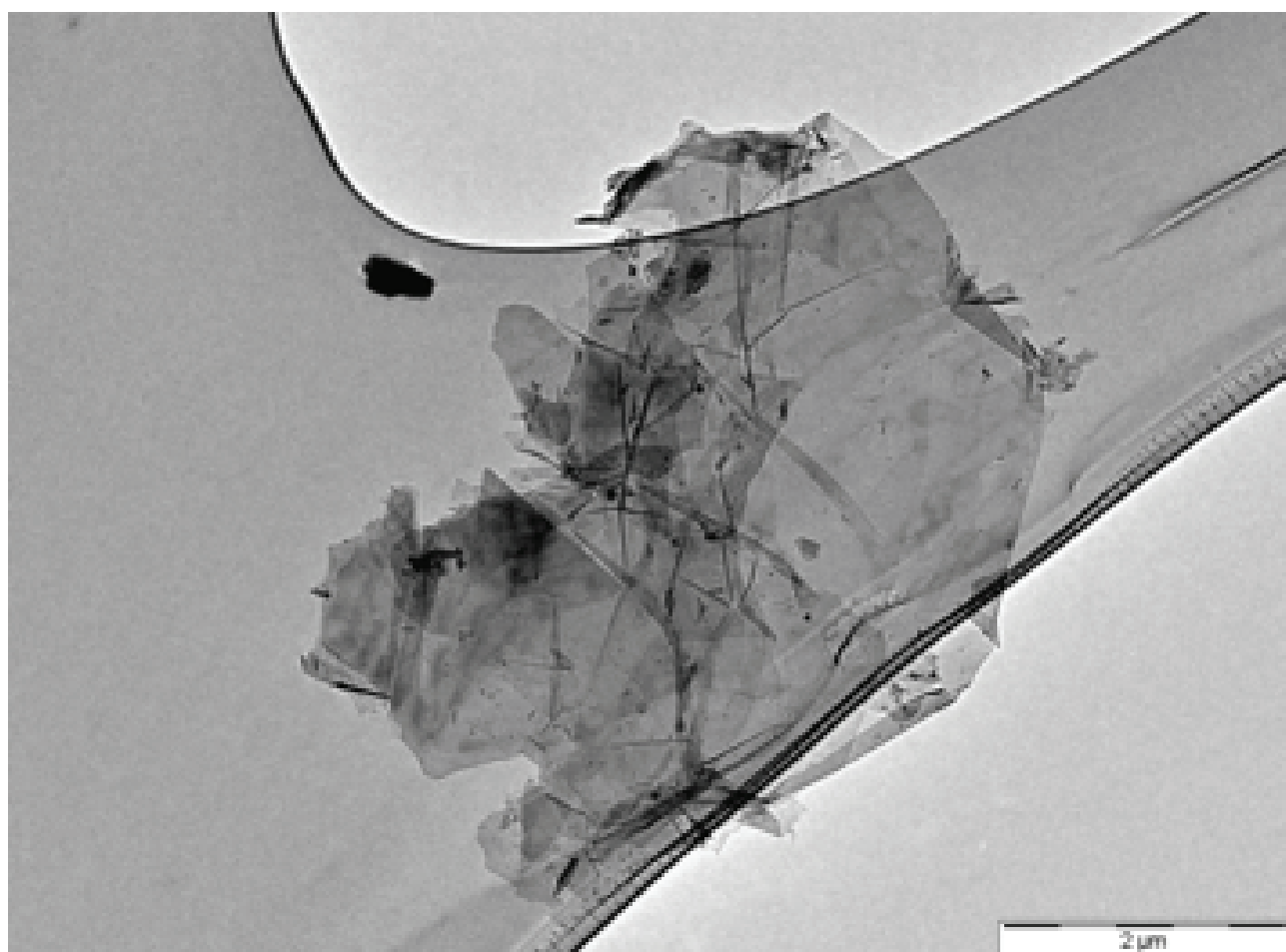
<http://vpetrik.com/userfiles/docs/Graphenes/Davis2004.pdf>

Palacky University, Olomouc
Slechtitelu 11, 783 71
Olomouc, Czech Republic tel.: + 420 58 563 4948

Analýzy vzorku KARBONFILTR “Golden Formula” pomocí TEM, SEM a AFM

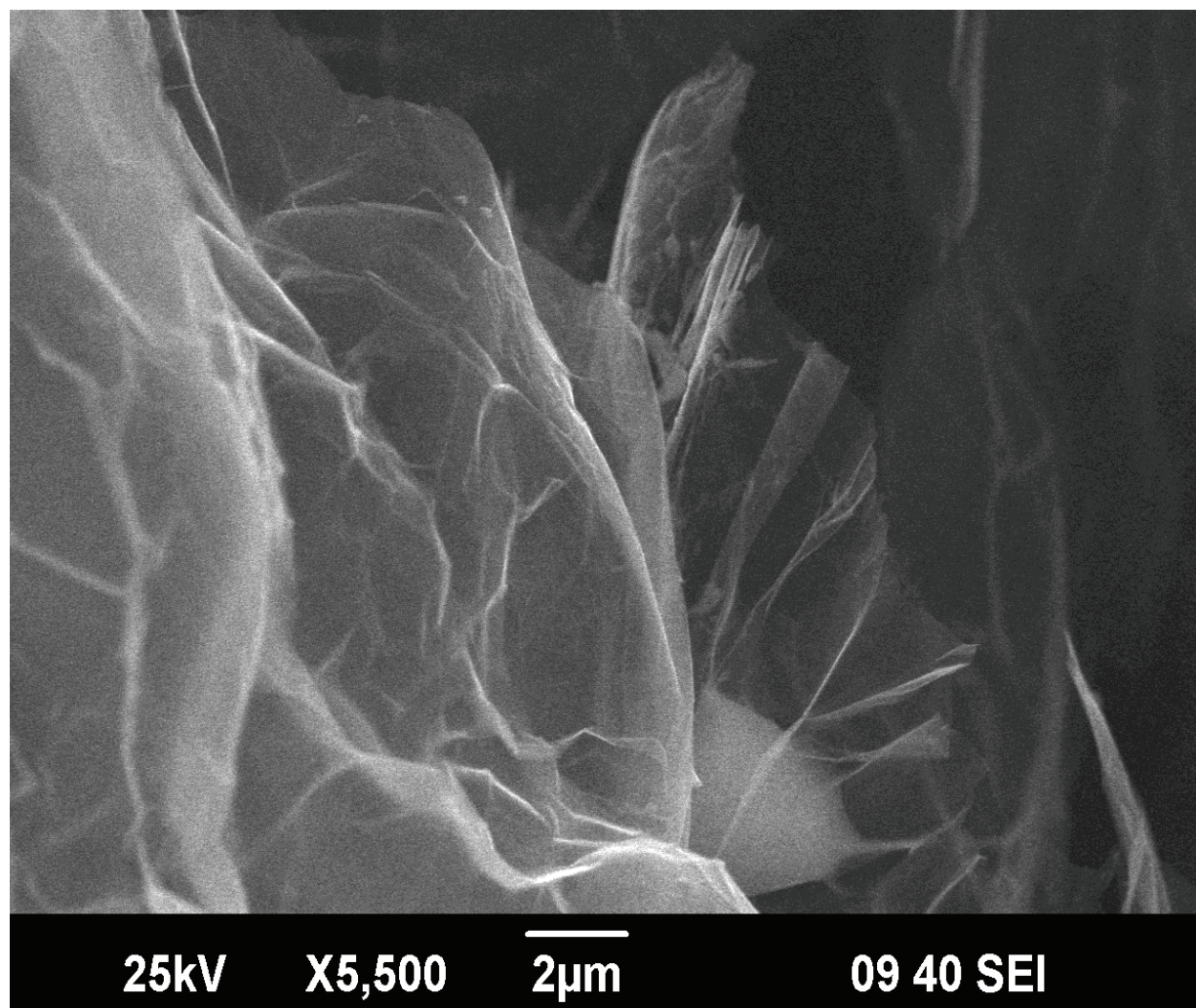
TEM

Na TEM snímcích jsou patrné tenké transparentní uhlíkové listy o velikosti 1-3 μ m, z části pokryté částicemi stříbra.



<http://vpetrik.com/userfiles/docs/Graphenes/FILTR%20Golden%20Formula%20protokol-5.doc>

An investigation of HRCM by method of electron scan microscope at the Lomonosov Moscow State University



<http://vpetrik.com/userfiles/docs/Graphenes/MGU%20graphenes.rar>

From their conclusion:

«According to the microphotographs and the local X-ray spectral analysis, it is possible to identify the material with polluted inorganic salts (including aluminosilicates of potassium, calcium, magnesium) graphenes»

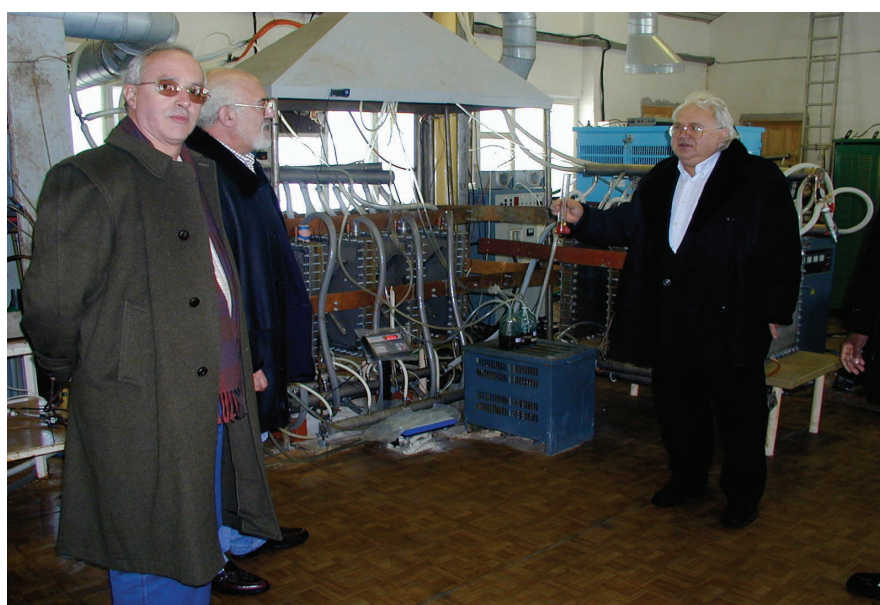
<http://vpetrik.com/userfiles/docs/Graphenes/Protokol%20MGU%202010.doc>

HRCM industrial production and practical value.

Today industrial production of basic component for HRCM production line has been created, i.e. chemical compound of high reaction ability Cl_2O_7 , which synthesis is realized from NaCl in platinum electrolyte pots of special design. Production line ensures HRCM final production, capacity up to 300 t annually



HRCM industrial production



Platinum electrolysis

Graphite with chemical compound Cl_2O_7 in inter-layered spaces was named GSVR (graphite mixture of high reaction ability). Reaction of GSVR disintegration does not require special hardware and may be launched under any conditions.

To launch auto catalytic process of chemical compound disintegration in inter-layered spaces of carbon matrixes, we may sufficiently initiate reaction by any of known methods (chemical, mechanical, photochemical, thermal, etc.). Moreover, owing to special admixtures in chemical compound (positive catalysis) reaction goes in a mode of self-accelerating branched chain reaction. Disintegration of chemical compound in inter-layered graphite spaces is accompanied by emission of gaseous products, thus leading to destruction of carbon crystallite into separate components: atomic carbon planes.



Delegation of Spanish scientists gets familiar with industrial method for production of graphenes, 2001



Application of special admixtures initiating auto catalytic acceleration of reaction results in exponential growth of reaction rate. Gaseous products of chemical compound disintegration actively emit HRCM from reaction zone. Zone of reaction reveals characteristic “plasma” illumination.

In order to produce HRCM including (predominantly) graphene and graphene complexes, auto catalytic process of chemical compound disintegration in inter-layered space of carbon matrixes is maintained in cold mode. For this purpose, inhibitors are added to initial chemical compound Cl_2O_7 (negative catalysis), providing strongly delayed branching and slow auto acceleration of reaction, which is called degenerated branched chain reaction. Such reactions are accompanied by long-term, sometimes one-hour period of induction (period of latent auto acceleration).

Properties HRCM

As it was estimated, HRCM demonstrates unique sorption properties unachievable for other carbon materials. For example, comparison tests for HRCM versus the best sorbent on US market (activated coal of coconut – GAS) demonstrated that HRCM sorption properties exceed the same of GAC up to 140 times!

<http://vpetrik.com/userfiles/docs/HRCM/SIERRA.pdf>

Anomaly HRCM sorption properties may be explained so that carbon atoms on the periphery of graphenes are not saturated, have extra chemical activity and may be linked with numerous chemical compounds to compensate free valence. Other HRCM sorption properties may be explained so that huge specific surface of compacted HRCM carbon mass provides for trapping of finest mechanical particles, often being carriers of various chemical, radiation and bacterial impurities.

In Russia, systematic HRCM tests and evaluation of optional use as sorbent for drinking water treatment had been launched in 1999. Moscow University named after Lomonosov, faculty of chemistry completed over 30 tests to reveal potential HRCM sorption properties to different chemical compounds polluting drinking water. В результате исследований было показано, что УСБП в сотни раз превышает сорбционные свойства ранее известных сорбентов.

<http://vpetrik.com/userfiles/docs/HRCM/MGU.pdf>

By request of the Russian Edinstvo Party, special comparative trials were carried out on HRCM and TEG (thermically expanded graphite). It was demonstrated that in sorption properties HRCM is 5 to 200 times superior to TEG by various indicators.

<http://vpetrik.com/userfiles/docs/HRCM/strg.pdf>

In addition, HRCM was tested for many years for the Armed Forces of the Russian Federation approved on 20.01.2001. Acting Head of Weapons for the Armed Forces of the Russian Federation, as well as tests on 27. 02. 1998 approved by Deputy Head of the Central Scientific Investigation Institute of the Ministry of Defense of the Russian Federation 4 CNII MoD RF on military satellite research & development.

“Conclusion: “The trial son the HRCM material have established its very high absorptive capacity in regard to combustibile and technical liquids used at

chemical plants, storehouses of flammable petroleum byproducts and in combat. Of particular interest is the possibility of using this material in localizing oil spills and absorbing their fumes. The material can be used in the creation of ecologically clean technology to liquidate spills of petroleum byproducts. The HRCM material was effective in EMERCOM operations.”

In view of completed full-scale tests of new carbon material dated 15.06. 2002 completed in accordance with joint decision adopted by Rosaviakosmos and Satellite Troops of MoD, RF to improve ecological safety of regions adjacent to launching and flight trajectories of space missiles, including the following directions:

- assessment of HRCM efficiency to neutralize spillages of missile fuel components (e.g. NDMG); - assessment of HRCM capability to treat water of different pollution rate by oil products and missile fuel components;
- technology for extraction of toxic agents and products of destruction from soil and water;

A decision was made: “Decision for application of carbon mixture of high reaction ability in the interests of NBC troops, MoD RF, approved by Deputy Head Acting Head of NBC troops MoD RF for weapons and R&D”,

<http://vpetrik.com/userfiles/docs/HRCM/MCHS.jpg>

Investigations carried out by the Russian Federal Aviation and Cosmic Agency, 1998.

<http://vpetrik.com/userfiles/docs/HRCM/kosmos.pdf>

Tests for assessment of optional HRCM use to ensure safety of chemical weapon destruction in m/u 61469 in 2000 demonstrated that HRCM sorption properties for liquid phase of combat toxic agents, such as mustard gas, sarin, soman exceed similar parameters of coal in catalytic CT-1 for more than 30 times!

<http://vpetrik.com/userfiles/docs/HRCM/otrav.pdf>

Investigations carried out at the Federal Scientific Investigation Institute of Fire Prevention in 2002.

<http://vpetrik.com/userfiles/docs/HRCM/VNIPO.pdf>

Also, the sorption properties of HRCM were studied at many other centers of investigation all over the world, among them:

Kwait, Korea, China, Czech Republic, Vietnam, India, Germany and others.

http://vpetrik.com/userfiles/docs/HRCM/India_test.pdf

<http://vpetrik.com/userfiles/docs/HRCM/kuwait.pdf>

http://vpetrik.com/userfiles/docs/HRCM/test_report_korea.pdf

At NovaBiotec Dr. Fechter GmbH Germany, comparative trials with 28 indicators of filters made by the four leading manufacturers were carried out. The filters with the HRCM sorbent were absolutely superior and they purified water by 22 indicators, while the famous European Brita filters purified water by just 4 indicators. The investigation was carried out by the initiative of **THE FEDERAL SERVICE FOR SUPERVISION OVER PROTECTION OF CONSUMER RIGHTS AND HUMAN WELFARE**

<http://vpetrik.com/userfiles/docs/HRCM/germany.pdf>

Also, **THE FEDERAL SERVICE FOR SUPERVISION OVER PROTECTION OF CONSUMER RIGHTS AND HUMAN WELFARE**, by order of its director G. G. Onishenko, carried out a comparative investigation of filters at its own Federal Erisman Scientific Centre of Hygiene.

<http://vpetrik.com/userfiles/docs/HRCM/Erisman.pdf>

The investigation was carried out with 18 pollutant indicators. The filters with the HRCM sorbent were shown to be effective by 16 of them.

<http://vpetrik.com/userfiles/docs/HRCM/rospotrebnadzor1.pdf>

A comparative investigation of HRCM with GAC, the best sorbent available on the American market, was carried out in the USA.

<http://vpetrik.com/userfiles/docs/HRCM/Excelchem.pdf>

It is strategically important that HRCM may be produced in any volumes directly in the field.

Optional HRCM production directly on board ocean vessels for oil transportation is an urgent necessity. Requirement for treatment of ballast waters on oil tanker ships calls for construction of new processing facilities. In addition to cost costs incurred for treatment oil-polluted water, vessel demurrage during drainage constitutes a considerable share of costs. Outlook of future technologies for treatment of ballast waters directly on board tanker ships during shore approaching is limited by problem associated with bulk weight of existing sorbents. Opportunities for HRCM production directly on board the vessel using concentrate will be an excellent solution and opens new outlook to use sorbents for environment protection purposes.

Beginning in 2001, HRCM at the industrial scale was successfully used by the Shell Lietuva UAB to clean water byproducts in oil extraction.

<http://vpetrik.com/userfiles/docs/HRCM/Litva.pdf>

Carbon mixture of high reaction ability was used in Moscow, the capital of the Russian Federation on a number of municipal facilities, also including water supply operators, industrial garbage disposal companies and oil processing facilities. Results of such application are reflected in the Order of Moscow Mayor “About application of carbon mixture of high reaction ability (HRCM) to liquidate consequences of oil spillages and fire extinguishing” dated February 8 1999 No. 91BPM. This documents states that HRCM demonstrated “capability to extract oil products (in emulsified state including), drastically improving capabilities of existing sorbents, as well as high efficiency during fire extinguishing”.



HRCM boom protection on Moskva River

HRCM proved high efficiency during spillages of petroleum, oils and lubricants (POL) and oil products in the ground and is used by many companies and enterprises to liquidate ecological disasters. In particular, joint-stock company Transneft in 1997 – 1998 for oil transport purchased 25t of HRCM to liquidate oil spills in case of unauthorized oil siphoning from pipelines! HRCM nanocarbon sorbent was tested for ecological applications and is used in several foreign countries.



Liquidation of emergency POL spills using HRCM in Shaulyaj, Lithuania. Fire engines are equipped with special HRCM-filled pads.

**In Europe, the study of graphene sorbent USVR started back in 2001.
Madrid 2001 Godsey, Media:**

“Additionally, Spanish scientists and businessmen have also shown interest in launching and maintaining co_ operation with V.I.Petrik. One of the problems tackled within the subject matter of their teamwork is better quality and look for the territorial water reservoirs in Spain. Its lake “Lago del caza del campo” was slated as a sample source for the following test, held at academician V.I.Petrik Scientific Centre in Saint Petersburg. After treated with an HRCM filter, the sample water underwent a comprehensive chemical analysis by the Analytical Centre of the State M.V.Lomonosov University in Moscow. (The university is accredited at the Russian Federation Ministry of Natural Resources.)

The results demonstrated that the HRCM_filtered water had its major pollution factors almost three times as lower than the initial contamination test data, which had outnumbered the sanitary standards.

Spanish scientific authorities carried out a research of the HRCM properties to identify its application fields and environmental safety, which took quite a long time. As a result, they granted an international certificate for the HRCM to be legitimately and unlimitedly used by European countries.

During his stay in Spain, in December 2001, academician V.I.Petrik presented a report to Spanish scientific and business authorities, and hosted a meeting at the Spanish Ministry of the Environment”.



***Academician V.I.Petrik granted an international certificate
for the HRCM at the Spanish Ministry of the Environment***



Academician V.I.Petrik reading his report to Spanish scientists and business representatives



MINISTERIO
DE FOMENTO

SUBSECRETARÍA

DIRECCIÓN GENERAL
DE LA MARINA MERCANTE

Subdirección General de Tráfico,
Seguridad y Contaminación
Marítima

Ref.- 04/jv/pg

**ASUNTO: SOLICITUD DE HOMOLOGACION DEL PRODUCTO ABSORBENTE
"USVR".**

En contestación a su escrito de fecha 7 de los corrientes en relación con el asunto y a la vista de las pruebas de toxicidad realizadas por el Instituto Español de Oceanografía, así como de la documentación técnica adjunta, indicando que el producto no es tóxico a los organismos *Sparus aurata*, *Cardium edule*, *Carcinus maenas*, esta Dirección General ha resuelto **autorizar provisionalmente** su uso en aguas bajo jurisdicción del Estado Español, para la recuperación de hidrocarburos y otros productos contaminantes en el mar.

Esta autorización es válida hasta el **30 de noviembre del 2002**, pudiendo ser prorrogada a petición del interesado.

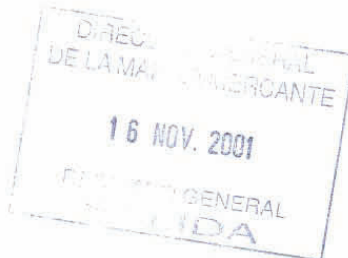
Madrid, 16 de noviembre de 2001
EL DIRECTOR GENERAL,



Fdo.: José Luis López-Sors González

ECOTEC, S.L.
At. D. Jesús Pascual Marcos
Consejero Delegado
López de Hoyos, 78
28002 MADRID

C/Ruiz de Alarcón, 1.
28071 Madrid.



Telf. 91 597 92 69
Fax . 91 597 92 35
e-Mail: mnogueira@mfom.es

Graphenes and Medicine.

The study of graphenes for use in medicine began in 1999 at the following scientific institutions:

- At the Russian Cardiological Scientific Production Complex of the Ministry of Health of the Russian Federation, under the direction of its Vice-Director, Professor V. V. Kukharchuk, in 1999.

http://vpetrik.com/userfiles/docs/HRCM/plasma_krovi.pdf

- The Djanelidze Scientific Investigation Institute of First Aid, under the direction of its Vice Scientific Director, Professor A. M. Zhirkov, Director and Doctor of Medicine, in 2000.

<http://vpetrik.com/userfiles/docs/HRCM/NiiSkoroipomoshi.pdf>

- At the Federal State Unitary Center of Experimental Medicine, under the direction of its General Director E. G. Zhilyaev, Lieutenant-General of the Medical Service and Doctor of Medical Sciences, in 2000.

Over the course of this investigation the unique properties of HRCM in healing wounds were brought to light.

<http://vpetrik.com/userfiles/docs/HRCM/Extreme%20Medicine%20Center-En.doc>

In 2008, the Government of the Russian Federation ordered the systematic investigation of HRCM for toxic harmlessness.

The investigation was carried out at the Federal State Scientific Institute of Toxicology. The results of the in vitro experiments demonstrated the complete harmlessness of HRCM, as well as the fact that when ingested this material possesses a marked ability to absorb toxic elements and cholesterol-like substances.

<http://vpetrik.com/userfiles/docs/Toxicology/ITWISE/Conclusions.doc>

An investigation on toxic harmlessness was carried out in the USA

<http://vpetrik.com/userfiles/docs/Toxicology/Nautilus%20Lab.pdf>

Biological activity of water cleaned by HRCM.

Beginning in 2009, systematic investigations on the biological activity of water cleaned with the help of HRCM began to be carried out. The investigations were carried out in the USA, Russia and India. The results convincingly proved that water cleaned with the help of HRCM has adaptogenic properties.

Investigations were carried out at the Federal State Scientific Institute of Toxicology

<http://vpetrik.com/userfiles/docs/HRCM/ZF2%20ENG%20Toxicology.doc>

<http://vpetrik.com/userfiles/docs/HRCM/ZF5%20ENG%20Toxicology.doc>

The biological activity of water passed through HRCM was confirmed by Brunswick

Laboratories, USA.

<http://vpetrik.com/userfiles/docs/Toxicology/Toxicology%20USA.pdf>

Video:

Mice running

<http://vpetrik.com/userfiles/docs/Toxicology/US%20Toxicology%20video%20RUN.mpg>

Mice swimming

<http://vpetrik.com/userfiles/docs/Toxicology/US%20Toxicology%20SWIM.mpg>

The results of investigations on the biological activity of water cleaned with the help of HRCM carried out in India.

<http://vpetrik.com/userfiles/docs/Toxicology/Toxicology%20India.rar>

Studies of the biological activity of water on plants: Center for Nanomaterial Research
Studies of the biological activity of water on plants
Palacky University, Olomouc

<http://vpetrik.com/userfiles/docs/HRCM/OPV.zip>

In 2012 the ST. PETERSBURG RESEARCH INSTITUTE OF PHYSICAL CULTURE was the first to carry out an investigation on the biological activity of water cleaned with the help of HRCM on professional athletes (Olympic reserve). As a result the adaptogenic properties of the tested water were fully established.

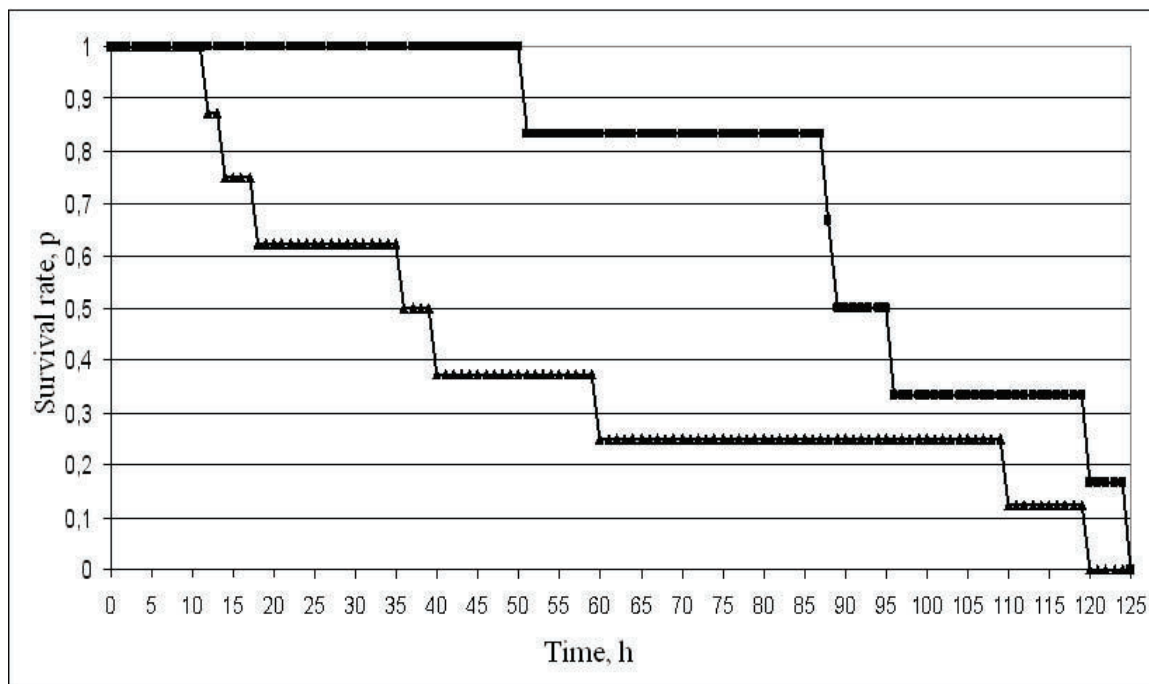
<http://vpetrik.com/userfiles/docs/HRCM/Sportsman.doc>

Beginning in 2012, we began investigating the properties of HRCM as an enterosorbent in the event of uremic intoxication. The investigations were carried out at Bios-Polifarm, Russia, and BioBoston Kontrakt Laboratories, USA.

Experimental researches are spent according to possibility *per os* application HRCM for reduction of expressiveness of uraemic intoxications by models of acute renal insufficiency (ARI) and accruing chronic renal insufficiency (CRI). The ARI in rats invoked by surgical removal of nephroses in one stage.

It is positioned at the ARI the maximum lifetime rats in experimental bunches which received and did not receive HRCM compounds 6-7 days. It is a biological limen of survival rate for the yielded kind of animals. In the range of 35-40 hours the actual survival rats the containing on HRCM a ration remains at level of 100 %. Thus the quantity persisted the rats containing on a standard ration, in the same time interval does not exceed 50 %. In turn 50 % the survival rats receiving HRCM is displaced by 90 hours.

<http://vpetrik.com/userfiles/docs/Toxicology/removal%20of%20the%20kidney%20mice%20.pdf>



The survival rate of nephrectomized rats that were kept on a standard ration (lower line) and against the background of enteric administration of structured carbon suspension (ItWise BAA) (upper line).

Additional material

Универсум Виктора Петрика

The Universe of Victor Petrik

<https://cloud.mail.ru/public/15937ba6f42f/Universum%20Viktor%20Petrik.mpg>

<http://youtu.be/KkTJcR3P3jsъ>

Академические хроники

Academician chronicles

<https://cloud.mail.ru/public/ec3e9344b199/Academician%20chronicles.mp4>

<http://youtu.be/FUgVz2Myjms>

Чифир для гения

Chifir for genius

<https://cloud.mail.ru/public/fd60153b7f1d/Chifir%20for%20genius.mp4>

<http://youtu.be/f9AH4t7fCbo>

Экологическая безопасность городов

Ecological safety for all cities

<https://cloud.mail.ru/public/eea1c939ac1c/Ecological%20safety.mpg>

<http://youtu.be/1b5GVRsOepQ>

Фрагмент фильма углерод

An excerpt taken from film by Victor Petrik entitled Carbon

<https://cloud.mail.ru/public/bf59afed16cc/grafen.mpg>

http://youtu.be/Z7GG-0_bwaM

Криминальная Россия

Criminal Russia "Gangsters and philanthropists"

https://cloud.mail.ru/public/a4983e5684b5/kriminal_russia_engl.mpg

<http://youtu.be/sSeHcMTIVfQ>

Жидкие радиоактивные отходы

Liquid radioactive waste

<https://cloud.mail.ru/public/447674e5f232/Liquid%20radioactive%20waste.mpg>

<http://youtu.be/l8gyRCIBZIY>

МТБЭ фильм телеканала CBS

MTBE film by CBS television

<https://cloud.mail.ru/public/92b10e1aaf78/MTBE.mpg>

ЛОТ Фантастика но факт

Leningrad region public television - Fantasy but fact

<https://cloud.mail.ru/public/65deff610ee4/LOT%20English.mpg>

<http://youtu.be/eB19b6-izdw>

Не оскудела Россия фильм 1997 года

Russia not fail

<https://cloud.mail.ru/public/16d1d062716f/Russia%20not%20Fail%201997.mpg>

<http://youtu.be/7-sA6sgYaSg>

Телеканал VOT Русские идеи (Дети посрамили китайских ученых)

Tv channel VOT - Russian ideas (children produce graphene)

<https://cloud.mail.ru/public/3dbfd630c9da/VOT%20Russian%20Ideas.mpg>

<http://youtu.be/OJeW6h3cMas>

The film is about the visit of the scientists of the RAS

<http://youtu.be/eX7EKiGnTP0>

Appeal to Russian President AV Medvedev

<http://youtu.be/liUFDzsmFYE>

Технология выделения и разделения металлов платиновой группы

Technology of Isolation and Separation of Platinum Group Metals

<https://www.dropbox.com/s/26bfakxn3nt0e3t/Letter.mp4?dl=0>

The American delegation

<https://www.youtube.com/watch?v=7Gq2Faqpulo>

Research Institute of High-Frequency Currents

<http://youtu.be/u-8tu5VEYG0>

Press conference in the Ukraine
<http://youtu.be/UOhKTOXDEFg>

Press conference about HRCM filter testing on sportsman
<http://youtu.be/2vydbwLboOQ>

<http://www.itar-tass.com/c9/588811.html>

Interview of Director of the Institute of Criminalistics FSB of the Russian Federation
<http://youtu.be/vI3EcyMmLWc>

TV “Sci-Fi but the fact” (handing invitations to Bush, the problem of MTBE)
<http://youtu.be/F9H5VFqtAcQ>

Interviews Kaku Nakanishi
<http://youtu.be/M1upjXeg78Q>

The visit of the Chinese delegation

Часть 1

<http://youtu.be/kBzQu2W61iE>

Часть 2

<http://youtu.be/1gtUqrbRpmg>

Часть 3

<http://youtu.be/GQkwI4tlkGE>

Индийская делегация

Презентация Индия

Presentation of India

<http://youtu.be/IVvs8P95rm0>

The Indian delegation

<http://blog.dp.ru/post/336>

<http://blog.dp.ru/post/342>

Пресс конференция индийских ученых в ИТАР ТАСС

Press conference of Indian scientists in ITAR TASS

<http://youtu.be/ker5xsT55ww>

Интервью индийских ученых

Interview with Indian scientists

<http://youtu.be/Cyc76iTG78Q>

Report of the Indian delegation

<http://vpetrik.com/userfiles/docs/HRCM/Indian%20report.pdf>

Articles of Moscow state electronic engineering institute (technical university),

<http://vpetrik.com/userfiles/docs/Nevolin%20articles/Nevolin%20Articles.rar>

V.K. Nevolin

Moscow state electronic engineering institute (technical university),

http://vpetrik.com/userfiles/docs/Nevolin%20articles/USVR_EN.doc

Interviews of leading academicians of the Russian Academy of Sciences:

Aldoshin

<http://youtu.be/rgRQkKI0jR0>

Ovcharenko

http://youtu.be/pO_eEcKc1Ew

Novotortsev

<http://youtu.be/F98czg6u9Nw>

Eremenko

<http://youtu.be/-CBGTQzggbA>

Smetannikov

<http://youtu.be/LdsGvC63Cj0>

delegation RCTU

http://youtu.be/y_u-NGUOMh8

Chekmaryov

<http://youtu.be/wKqaE4sxMQ4>

Fesenko

<http://youtu.be/0fZVSJD1tHs>

TV Sci-Fi but the fact (handing invitations to Bush, the problem of MTBE)

<http://youtu.be/F9H5VFqtAcQ>

Meeting with Ralph Moss:

Interview of Ralph Moss

<http://www.youtube.com/watch?v=V6VPg2MgRe0>

Ralph Moss and graphenes

<http://youtu.be/51J98sMjlcY>

Презентация по воде
Presentation on Water

На Итальянском (Italiano)

<http://vpetrik.com/userfiles/docs/Presentations/presentation%20ITA.pdf>

На Английском (English)

<http://vpetrik.com/userfiles/docs/Presentations/presentation%20ENG.pdf>

На Немецком (Deutsch)

<http://vpetrik.com/userfiles/docs/Presentations/presentation%20DE.pdf>

На Русском

<http://vpetrik.com/userfiles/docs/Presentations/presentation%20RUS.pdf>