PHLburg Technologies, Inc.

1275 Drummers Lane
Suite 101
Wayne, PA 19087

Telephone: 610-688-6800
Fax: 610-975-5800
Website: phlburg.com

February, 2009

IN THIS ISSUE:

MESSAGE FROM NEIL B. GODICK

Corruption is deeply ingrained in Russia's society. It was present during the time of the czars, continued during communism, and is a stifling problem today. Here are some interesting statistics:
#1. According to a 2007 study Transparency International, a corruption watchdog, it estimates that the amount of money changing hands has sharply increased, surpassing $319 billion per year. That amounts to about $2,250 for each of the country's 142 million citizens. The same group reported that Russia dropped four spots to 147th place, its lowest ranking in eight years.
#2. Interior Minister Rashid Nurgaliyev, in an October 2008 speech, said 70% of entrepreneurs bribe corrupt officials. He also said criminal groups spend 50 percent of their criminal incomes to bribe officials. These same entrepreneurs have gray income (unreported/ untaxed income) and bribes amount to 50 percent of this income.
#3. An INOP-CESSI study produced a "price list" of bribes.

- $2 - $5 million for a place on a party list for a State Legislature election
- $250,000 to have legislation introduced
- 20- 33% of an order's total value to win a state purchase order
- 30-40% of the project's total value to participate in a national project
- 3% of the project value to get a line item in the federal budget
- $1 million-$5 million to obtain a license, prevent a license it has from getting revoked or get a competitor's license revoked.
- 33% of the contract value to obtain help to assure that a transaction is carried out.
- 30-50% of the sum on which the customs duties are assessed to have customs duties reduced
- 30-50% of the tax arrears to have the tax arrears written

We do not intend for these reports to solve any need our readers may have. We do intend to keep everyone current on technology developments in Russia. If you would like any additional information on any of the developments reported – send us a note.

Physics-

St. Petersburg Polytechnic University (SPbGPU,

Nanotechnologies Detecting Device-Nanomarkers

www.nanomarks.com) **scientists** have developed a nanomarker for marking, detecting and identifying objects. It can be used in various circumstances: for marking a set or group of objects that are constantly in use (documents, keys, purse, cell phone etc). The method applies a tag an object (with a marker pencil), illuminating it with an external electromagnetic radiation source, and measuring the radiation from the tag with a detector.

The nanomarker is a compact device, the size of a ball pen, capable of applying a micro-tag on any object. The marker dots send signals a distance of 1–10 meters from the main object-matrix. By regular scanning of marked objects, the device compares the responses received with those available in its database. On a considerable change of the marker's signal or its absence, the base station emits a sonic or a vibration-signal attracting the user's attention. This warning signa; helps eliminate the consequences of forgetfulness and detects theft. The device forms an external personal security contour and gives users a feeling of greater comfort in high-crime areas.

The developers know of no direct competitors for the marker device. The project is still in the R&D stage. Under development is the electronic unit for the base station – marker scanner. Testing the nanomarker's behavior in various media is in progress.

Nanocontainers

ZAO Nanotechnologii I Innovatsii (Zelenograd) has developed a production technology for nanocontainers (patent application RU 2007145162). The nanocontainers are tubes with a cavity (internal diameter 15 nm, external diameter 50nm, length up to 2000-3000 nm). The tubes are ecologically appropriate and neutral relative to the environment and to living organisms. They are readily available in commercial quantities. The nanocontainer is tubular multi-layered shell. The surface of outer part of the shell is SiO_2; the surface of inner part of the shell is Al_2O_3,

Commercial applications for the nanocontainers are quite varied:

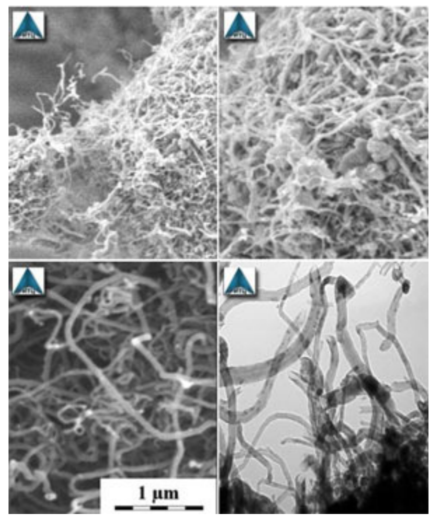
1) Medicine
    - Nanocapsules with identification tags - precise drug delivery directly to indicated cells
    - Gradual release of drugs
    - Nanoparticles to mark cancerous or damaged cells and viruses;
2) Ecology - water treatment
    - Elimination contaminants
    - Delivering herbicides and antimicrobial agents;
3) Anticorrosion preparations;
4) Absorbing ions, hydrogen storage;
5) Coating seeds with fertilizers/active agents, flavoring additives, solid perfumes for paper;
6) Fillings for plastics;

7) Antiradar coatings;
8) Moulds for producing nanoparticles;
9) Application in advanced ceramic materials and bioimplants;
10) Catalytic materials, molecular sieve, etc.

Nanocarbon Materials

***Komsomolets* works in Tambov** has started to commercially produce the carbon nanomaterial Taunit using CVD. Taunit is formed from multilayered packet nanotubes 10—60 nm in diameter and up to several nm in length. These are carbon multi-wall nanotubes with following size:

Outer diameter, nm	10-60
Inner diameter, nm	10-20
Minimal Length, µm	2
Average pore size, nm7	



Photos of TAUNIT material

The technology and equipment for producing the new carbon nanomaterial were developed by **OOO Tambov Innovation Technologies Center of Machine-Building (www.center.tamb.ru)** jointly with **Tambov State Technical University (www.tstu.ru)**. Taunit is sold in micrometer granules composed of intertwined bundles of multi-walled nanotubes. Taunit is used in aircraft, nuclear and aerospace industries, in medicine and pharmaceutics, in supercomputer production, video equipment, flat displays, monitors, and special-purpose filters. Adding Taunit enhances the quality of lubricants, structural composites, and construction materials. Taunit granules can serve as carriers of catalysts or drugs.

Health Sciences-Medical Implants

Institute of Problems of Laser and Information Technologies (IPLIT RAS, Troitsk, Moscow oblast, www.laser.ru) has developed a technology for surface-selective laser sintering. The technology is intended for layer-by-layer formation of medical implants in accordance with a preset computer model.

Applications: maxillofacial, spinal and neurosurgery, orthopedics.

Materials used**:** bio-stable and bio-resorbable polymers with various fillers and biologically active agents. In the surface-selective laser sintering, the melting process,

- is triggered by laser radiation absorption,
- not by the polymer,
- but, by sensitizer particles added to the polymer powder.

The absorbing particles size is much smaller than the polymer particles, and they are placed on the latter's surface. This produces a more uniform absorbed laser radiation distribution. Therefore, the sintering can occur without changing the biochemical composition inside the polymer particles. This technique eliminates the current restrictions on applying surface-selective laser sintering for producing biocompatible and bioactive structures from thermolabile materials.

The surface-selective laser sintering technology is highly productive and its spatial resolution (~ 100 µm) is quite sufficient for biomedical applications. Implants manufactured by this method do not require additional fitting in surgery. The pilot plant for surface-selective laser sintering includes a continuous-action optical fiber laser, a system for laser radiation focusing and scanning, a system for material layer formation, and software.

Combined Ultrasonic Liposuction

State treatment-and-prophylaxis institution *A.A. Vishnevsky Third Central Military Clinical Hospital*, RF Ministry of Defense, Moscow has developed a method for combined ultrasonic liposuction (Patent RU 2302270).

Combined ultrasonic liposuction is a modern methodology using a combination of techniques making it possible to achieve desired procedure results while simultaneously offering greater patient comfort and reliability. Combined ultrasonic liposuction is based on aspirating the patient-friendly emulsified substance obtained by cavitation from ultrasonic waves at selective action on local fat deposits. The methodology differs from others as it does not aspirate the less patient friendly mechanically broken fat tissue. Using the combined ultrasonic liposuction the risk of damage to surrounding tissues is minimized. This liposuction method solves the following problems: reduces general traumatic damage and blood loss; removes adequate amount of fat tissue; leaves a level skin profile in the operated zone; reduces the post-operative rehabilitation period.

The combined ultrasonic liposuction technology meet physicians' and patients' recovery time requirements enables surgeons to achieve the planned operation results with the greatest comfort and least risk for the patient.

The technical result is:

- risk reduction for undesirable traumatic skin and adjoining vessels and nerve damage,
- no damage to surrounding body structures,
- maximum “skin lifting” effect,
- ultraminimal blood loss by reducing traumatic damage,
- no need for postoperative transfusion therapy,
- accelerated rehabilitation process,
- no postoperative cicatrixes; achievement of meticulous modeling of body contours.