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Dear ,

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## MESSAGE FROM NEIL B. GODICK

The Russian election season is over. No surprises. The Duma (Parliament) elected in December and the new President Medvedev elected in March won scripted elections by scripted majorities. Before and after the elections the Russian press has been full of speculation of what will change – we remain careful observers of the promised reforms. If and when implemented the reforms will make Russia an easier place to do business.

One thing that has changed is funding available for both basic and applied science. Last month we reported the government is allocating billions of dollars to establish world leadership positions in selected scientific fields. We are now aware of hundreds of millions of dollars becoming available for applied science through domestic and internationally funded venture capital funds. The combination of government funded basic science and private funding for applied science will return Russia's scientific community to its glory years.

For those businesses willing to make the effort to partner in Russia – EU and US business put up the expertise and Russia invest the money – the time is now.

*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.*

## Filters

**Scientists from M.V. Lomonosov Moscow State Academy of Fine Chemical Technology** have developed a new efficient filter for purifying various liquids. The filters can be used to purify a wide range of different oil products, solvents and oils removing both dirt particles and water droplets. The key feature of the filter is the gradually changing pore dimensions, with their diameter varying over a wide, but within predetermined, limits.

The filter material is a polyvinyl format polymer, whose molecules are formed from three kinds of links — acetate, vinyl acetate and vinyl alcohol. The polymer properties are substantially dependent on

the ratio of these three kinds of links in the polymer. Making use of this dependency, the scientists have developed a polymer synthesis methodology which results in a filter that, first, is a good sorbent of moisture, and second, is insoluble in gasoline, kerosene, oils or other organic liquids. In addition, the authors can cross-link the polymer in a way that three-dimensional grids are formed. These grids have "cells" which have different controlled dimensions — from microns to nanometers.

Because of their characteristic high porosity, mechanical strength and chemical resistance, as well as the capability of multiple regeneration and very low hydraulic resistance the filters can be widely used. The filter's unique properties make it possible to clean varied substances such as many kinds of fuel, oils, solvents and gases.

### Materials Sciences- Opals

**Russian scientists from the Institute of Solid-State Physics, RAS** have developed an unique technology for producing high-quality synthetic opals. In their bulk structure form synthetic opals can be a beautiful gemstone. In the form of films the opals serve as a base for making of photonic crystals. One of the principal advantages of this novel technique is that it reduces the production cycle 3-4 times. Another of the technology's advantages is its low cost. The price makes synthetic opals competitive and available to a wide range of users.

### Sensors - Food

**Scientists from St. Petersburg have developed an “electric tongue” for analysis.** The device originally designed to quickly and accurately distinguish a freshly made brandy from an aged one and discriminate between different types of brandy. The apparatus consists of a small bowl in which the brandy is poured, several sensors and a very complicated software system for processing the sensor signals. The result of the system is accurate identification of the drink. Such an "electronic tongue" will not be able to replace a top-class taster, but nothing suits the routine work requirements better, since it is objective, quick, and expresses the assay results in objective figures and diagrams.

The device operates on the principle of the human tongue, i.e., unlike conventional analytical devices, it does not isolate all components of a complex mix of taste or aroma of an object to then analyze them separately. The "tongue" determines the taste as a whole, like a good taster who unmistakably remembers and recognizes gustatory sensations but, as a rule, has no idea of the chemical composition of the product.

The technology has been further developed and applied for wine, coffee, soft drinks, pharmaceuticals, fermented foods, waste water, uranium waste stream, tomatoes, onions, seawater, milk, fermentation process, spent nuclear fuel, drinking water, medical solutions, meat, liver, fruits and vegetables quality applications.

Sorbents – Health  
Sciences

**NPK Katyusha, a St. Petersburg JSC**, has developed a new carbon-based nonspecific medical-purpose sorbent. The sorbent's high volume of mesopores in the form of 0.3 – 2.0 mm cylindrical granules have an atraumatic coating relative to blood corpuscles, a high capacity for toxin sorption, and an adjustable chemical modification on the surface. It is packed into a sterile column using a technology that prevents dust generation during storage and transportation. These sterile and depyrogenized columns meet the stringent requirements needed for medical applications. The substance has been used in medical assistance during natural disasters, and for the treating neurological, toxicological and narcological patients.

Sorbents –  
Environmental Science

**Omsk scientists have developed new effective sorbents based on nanocarbon.** In autumn 2008 scientists from the Omsk Institute of Problems of Hydrocarbon Processing, RAS (Siberian Branch) plan to inaugurate a pilot plant utilizing nanocarbon sorbents to purify technogenic gases and liquids. Installations will eliminate the emission of micro particles into the air from ferrous and nonferrous metallurgy factories and factories producing industrial carbon.