

Domestic space science for the new millennium

Atomic and hydrogen energy, nanotechnologies, effective energy conservation, cancer treatments and participation in space programmes are all on the agenda for the nation's largest scientific institution: the Institute of Heat and Mass Transfer (named after A.V. Lykov) at the NAS

By Yulia Vasilevich

Almost all processes in nature are accompanied by heat and mass transfer, without end. The Director of the Institute, a member of the NAS of Belarus, Oleg Penyazkov, tells us, "We can use plasma beams, with a temperature of hundreds of thousands degrees, to create fusion reactions and dispose of radioactive waste. We've made an engine which runs on hydrogen and are exploring the latest trends in biomedicine. We've also come up with a number of treatments for malignant diseases, using magnetised particles."

Today, the Institute is testing a spacecraft re-entry heat shield, designed to work in the atmosphere of each planet in our solar system. It is unique worldwide! Meanwhile, the Belarusian satellite's temperature stabilisation systems were created by the Institute, allowing it to withstand -100 to +100 degrees without the optical image being distorted

A recent major scientific forum, marking the Institute's 60th anniversary, gathered more than 350 leading scientists from 16 countries. A main theme was energy efficiency, as exhorted by the Director of the Institute of Thermaphysics, Sergey Alexeenko. He notes, "It is a known fact that the potential of energy efficiency in Russia is 40 percent! Before introducing new



Doctor of technical sciences, Prof. Leonard Vasiliev, claims prestigious international Grover Gold Medal

sources of energy, we should work on energy efficiency. In pure form, this is the intensification of heat and mass transfer. I'm going to participate in a 'round table' on industrial energy modernisation: a fundamentally important issue for everyone."

The Belarusian Institute of Heat and Mass Transfer is working on the solution of specific problems, such as the modernisation of thermal and reheating furnaces (used at most industrial enterprises since the 1960s-70s). Mr. Penyazkov notes that their

efficiency is so low that it has a negative effect. Accordingly, the Institute is joining forces with a number of factories to develop modern heating equipment, with prototypes being produced at Baranovich Mechanical Engineering Plant.

Self-knowledge through understanding of the past

By Yulia Kharitonovich

Book entitled *Minsk and Minsk Residents: Ten Centuries of History* to be released by end of year

The edition is being published across several volumes and follows an international conference of the same name, hosted by Minsk. Candidate of historical sciences, associate professor Alexander Grusha, who heads the Department of the Belarusian History of the Middle Ages and the Early Modern Times at the National Academy of Sciences, tells us that the collection will include extensive reports on various subjects relating to the history of the city of Minsk — from the Middle Ages to the present.

This is the fourth conference in the *Minsk and Minsk Residents: Ten Centuries of History* series, celebrating the 945th anniversary of Minsk's foundation. The first and second conferences were held in 2007 and 2009, devoted to general city history. In 2011, the third conference looked at the development of social institutions.

Such events help to unleash the potential of researchers while giving the opportunity to exchange knowledge within the scientific community.

Promoting cartoon talent

National Film Studio Belarusfilm ready to support children's animation studios across regions

The General Director of the film studio, Oleg Silvanovich, recently took part in the 15th International *Animaevka-2012* Animated Film Festival, hosted by Mogilev, approving the creation of an animation studio in Mogilev. He has promised to assist in its technical support and emphasises that Belarusfilm plans to create more short cartoons. To date, it has made just 147 animated films (now converted into digital format and released on four DVDs, as well as on a single golden collection disc).

Mr. Silvanovich tells us, "We're trying to do everything possible to allow young viewers to see our cartoons on television. Our studio is working on three modern animated series, based on the fairy tales of the Brothers Grimm: *A Fish Called Impossible* and the work over *The Adventures of Nesterka* is near completion.

According to the Director of Mogilev's Kinovideoprokat, Irina Belyakova, *Animaevka* has inspired the idea of creating a children's animation studio. It is to launch this school year, based at Mogilev's Vetrax cinema. Belarusfilm is to donate the necessary equipment and specialists are already being chosen.

Chicken paw as visiting card of the World Hockey Championship-2014

Gomel Vocational College of Mechanical Engineering creates fork-stick

The hybridised knife, fork and stick, created by young Gomel inventor Stanislav Galkovsky, is to be made of stainless steel and released in Belarus to coincide with the World Hockey Championship in 2014. A little smaller than standard cutlery, it is to have three prongs and cutting edge at the bottom, while sporting a hockey stick design. As the handle is at the top, more pressure can be exerted on the cutting surface, making it more efficient than a disposable version. Meanwhile, the prongs are very strong.

College students worked on the design under the guidance of professors, explains Director Gennady Kozlov. He tells us, "Our team enthusiastically supported the idea of creating new cutlery and it became an unusual assignment for us — not in complexity but in content, as this is the world's first fork-stick. I think it should be produced in commercial quantities and could become a calling card of the World Championship: you see a fork-stick and im-

mediately think of World Cup-2014 in Belarus."

Mass production would have to take place in plastic, so they could be disposable; however, a precise mould is required, so it's difficult to pay for this under non-commercial conditions. The metal version would be made as a souvenir, bearing the World Hockey Championship logo. At the end of last year, presenting the idea, Mr. Kozlov noted, "At such events, we don't always eat at a cosy table. If you're holding a plastic plate in one hand, you can't also hold a knife and fork. Cutting a piece of meat is very difficult and can lead to stains on clothing." The new cutlery helps solve the problem.

The design is reminiscent of a chicken paw: a 20th century symbol of pacifism. Of course, sport has been known as a realm of peaceful relations since days of old. In Ancient Greece, during the Olympic Games, all wars were temporarily suspended.

After great events, very often,

unusual details of local colour are remembered. For example, the Beijing Olympics was known for its souvenir chopsticks. Accordingly, the chicken paw may capture tourists' interest at the international hockey festival. "The handle should definitely bear the symbol of the championship and be inscribed 'Minsk-2014' as thousands of foreigners will take one home to show their friends and family," notes Mr. Kozlov.

The Gomel invention is ranked top in the contest '100

Ideas for Belarus' and is to be presented at an exhibition of the same name in Minsk, organised by the Belarusian Republican Youth Union.



Stanislav Galkovsky of Gomel with trial samples of forks