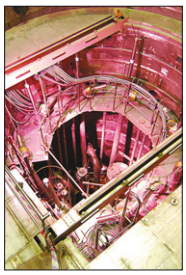
Russia

New nanotechnology centre aims to boost innovation

Nanotechnology in Russia is set for a significant boost with the establishment of a new centre that aims to generate commercial opportunities from nanophysics research. The North Western Nanotechnology Centre (NWNC) will be based at the Petersburg Nuclear Physics Institute (PNPI) of the Russian Academy of Sciences in Gatchina, which lies around 45 km south of Saint Petersburg. It will be built mostly with funding from Rusnano – a state-owned investment company that aims to commercialize developments in nanotechnology research – and could fully open by the end of next year.

Rusnano, which is providing 2.6 billion rubles (£53m) for nanotech research and technology transfer in Russia, will provide £14m of the estimated £20m cost of the NWNC, with the rest coming from the Leningrad regional government and commercial investors. The remainder of Rusnano's £53m investment fund will support the development of two more nanocentres in Moscow and Yekaterinburg that will do research in high-performance computing and materials science, respectively.



Alexander Butenin

Neutrons for nanoscience
The North Western Nanotechnology Centre will be based at the Petersburg Nuclear Physics Institute of the Russian Academy of Sciences in Gatchina, which is also building a high-intensity neutron reactor.

The NWNC will bring together researchers from the PNPI and the Saint Petersburg State University of Telecommunications, as well as the Leningrad regional government and a range of commercial partners. The new centre will focus in particular on nanoelectronics and nanomaterials, as well as using the PNPI's high-intensity neutron reactor, which will come online early this year, to probe the structure and properties of the new materials. The money will also see the creation of a 3000 m^2 "technopark" that will aim to promote technology transfer and industrial collaboration.

"Our task is not only to advance scientific research, but also to use the results of this research to create commercial products and services," says Grigorii Dvas, vice-governor of the Leningrad region. This commercialization effort will include support for spin-out companies as well as assistance with funding, patents and licensing, as well as tax breaks for organizations involved in scientific research.

Simon Perks

Astronomy

China installs trio of Antarctic telescopes

China has announced that it will build three new telescopes in Antarctica that will study the nature of dark matter and dark energy, examine the formation of all extrasolar planets and stars, and also improve our understanding of the solar system and supernovae. The telescopes will be installed at Dome A on the Antarctic plateau at a cost of $10m. The project is being led by the Chinese Center for Antarctic Astronomy (CCAA), a consortium of astronomers from the Polar Research Institute of China, several astronomical observatories of the Chinese Academy of Sciences and several universities in China.

The three 50 cm diameter telescopes – each equipped with a 10 000 × 10 000 pixel CCD camera – will form the Antarctic Schmidt Telescopes (AST3), which will be used to study supernovae and planets beyond the solar system. The first telescope will be installed and put into service later this month, with the remaining two expected to be installed by 2014.

"They are a new approach in a long sequence of instruments going back to the 1930s to discover transient sources that are so infrequent and occur so fast that they are seldom seen by accident," says Donald York from the University of Chicago, who is one of the founders of the Sloan Digital Sky Survey project. The Antarctic site has many benefits over other sites around the world as it offers very clear skies and stable air. "These kinds of advantages we can't get from other telescope sites," says Lifan Wang, CCAA director and astronomer at Texas A&M University in the US.

Lifan Wang

Clear vision
Researchers deliver the first parts of the Antarctic Schmidt Telescopes, which will be used to study supernovae and planets beyond our solar system.

The three telescopes will be joined by at least two others before the end of the decade – the 2.5 m Kunlun Dark Universe Telescope (KDUST) and the 5 m Dome A Terahertz Explorer (DATE5) telescope (October 2010 p7). KDUST will work in the optical and near-infrared to search for exoplanets, dark matter and the nature of dark energy, while DATE5 will operate in the terahertz regime and be used to study the origins of galaxies and stars.

Jiao Li
Beijing, China

Sidebands

UK teacher numbers boom

The number of people training to teach physics in England is at its highest level since 1979, according to data collected by the Training and Development Agency for Schools (TDA). More than 860 people started on a course to become a physics specialist this year – up 30% on 2010. The finding came just after the Institute of Physics, which publishes *Physics World*, announced that it would provide £20 000 bursaries to 100 graduates to learn to become physics teachers (December 2011 p9). Meanwhile, a new pilot programme of teacher-training courses in England is being adopted by 32 universities that will allow graduates to train in the specific combination of physics with mathematics. The courses seek to recruit more than 300 trainees for September.

Introducing flerovium and livermorium

Proposed names for elements 114 and 116 have been unveiled by the International Union of Pure and Applied Chemistry. Named after Georgi Flerov, founder of the Joint Institute for Nuclear Research (JINR) in Dubna, Russia, element 114 will, if approved, be called flerovium and have the symbol Fl. Element 116, meanwhile, will be named livermorium after the Lawrence Livermore National Laboratory (LLNL) and given the atomic symbol Lv. The elements were first created by researchers at the JINR back in 2004 and were both confirmed in 2010 by scientists at the LLNL in California and at the Centre for Heavy Ion Research (GSI) in Darmstadt, Germany. A consultation where scientists and the public can comment on the proposed names ends in April.

Boost for Morocco's solar plans

The World Bank has approved $297m in loans to help Morocco finance the 500 MW Ouarzazate Concentrated Solar Power Plant project. The plant is expected to be commissioned in 2014 and the entire project built by 2019. Once completed, the solar project will provide 18% of Morocco's annual electricity generation. It will deploy "concentrated solar power" technology, which uses reflectors to heat a fluid such as molten salts that is then used to generate steam and drive a turbine to generate electricity. The plant is part of the Desertec initiative, which seeks to build solar and other renewable-energy projects across North Africa and the Middle East capable of producing 500 GW of electricity, some of which will then be piped across the Mediterranean to Europe.