

NANOCON'25 conference indicated the latest directions of nanomaterial research

The 17th annual international conference NANOCON, which took place in Brno in October 15-17, 2025, confirmed that nanotechnologies and nanomaterials, thanks to their unique properties, are not slowing down in their expansion into medicine, material engineering, quantum electronics, energy, environmental protection and other industries and sectors. For the **287 registered participants from 31 countries** the program included **87 lectures and 143 posters**. The Czech Society for New Materials and Technologies is the co-organiser of this well-established conference.

Professor Jesús Santamaría Ramiro from the University of Zaragoza in his opening plenary lecture excited the audience with the progress of his research team in development novel therapeutic nanoparticles and ways to deliver them to the tumor and **to fight cancer**, from starvation therapy to the *in-situ* generation of toxic molecules. The use of **2D materials in medicine** was presented by another plenary speaker - Professor Peter Wick from the Empa research institute in Switzerland. His lecture was followed up thematically by a contribution of Professor Silvia Giordani from Dublin City University focused on carbon nanoparticle engineering for biomedical applications and also by Professor Hanna L. Karlsson from the Karolinska Institutet in Stockholm, who presented fast **methods for evaluating the toxicity** of nanoparticles in *in vitro* models.

Associate Professor Stanislaw Waclawek from the Technical University of Liberec, CZ, presented the new supramolecular nanomaterials for selective **water decontamination**. And thus highlighted another significant application area of nanomaterials – the environment. The wide thematic spectrum of the conference included contributions on **advanced scanning microscopic techniques** used to image surfaces at the atomic scale. Professor Rainer Hillenbrand from the CIC nanoGUNE research centre in San Sebastian presented near-field optical nanoscopy from visible to THz frequencies and its versatile applications, including mapping chemical composition or electrical conductivity at the nanoscale.

The Czech scientific community was represented in Brno by researchers from **13 universities and 11 institutes of the Academy of Sciences** of the Czech Republic. Participants delegated to NANOCON by foreign institutions made up 35% of the audience. They came not only from neighbouring countries (particularly from Poland, Austria and Germany) and other European countries (mostly from Italy, Switzerland, Spain and France), but also from distant countries, such as India, Japan, or Singapore.

“The distinctly international composition of the teams involved in nanomaterial research in the Czech Republic underlined the international character of the event and significantly improved the quality of lectures”, emphasizes Professor Radek Zbořil, general chairman of the conference, scientific director of the RCPTM research unit of the CATRIN institute at Palacký University in Olomouc, and deputy director of the Center for Nanotechnology at VŠB Technical University in Ostrava.

Experts from twelve **companies** – manufacturers and sellers of devices, technologies and nanomaterials – were also active at the conference. They presented their offer at stands and some also in the lectures of the main program.

About one third of all participants of the NANOCON conference were students of doctoral and post-doctoral programs. The competition for the **best lecture for a young scientist under 33 years** of age had a record number of 31 competitors. The winner was Martin Kopecký, a student at the Institute of Biochemistry, Faculty of Science, Masaryk University, CZ. He presented advanced nanoparticle-based labels for sensitive detection of biomarkers in lateral flow immunoassays. Seven honourable mentions were also awarded in view of the high quality of the lectures. One of them belongs to Antonella Udovicic from Johannes Kepler University in Linz, Austria, for her lecture on anodic titanium-tungsten memristors with analogue switching, which allow also to identify the optimal alloy composition.

The best poster was awarded to Jakub Vejrosta, a doctoral student at the Faculty of Chemistry, Brno Technical University, CZ. He demonstrated how surface acoustic waves and spin-coating allow bacteria to be oriented on a macroscopic scale. Honourable mentions were awarded to authors of seven other posters.

More information about the conference can be found at www.nanocon.eu.