

## 2024 IUPAP Early Career Scientist Award in Medical Physics



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**Oleksandra V. Ivashchenko** is a board-certified Medical Physics Expert (MPE) in Radiology and Nuclear Medicine at the University Medical Centre Groningen in the Netherlands.

In 2012, she graduated *cum laude* with an MSc in Applied Physics, with a minor in medical physics, from the Taras Shevchenko National University of Kyiv. Shortly after, she worked as a conversion engineer at Materialise NV in Kyiv, focusing on medical applications of rapid prototyping. She then pursued a PhD in medical physics, beginning an industrial PhD project in February 2013 between TU Delft and MILabs (the Netherlands), a preclinical imaging company, as a Marie Curie fellow. Under the guidance of Prof. F.J. Beekman, known for his ‘out-of-the-box’ solutions in preclinical imaging, she focused on developing task-oriented preclinical SPECT/PET/CT technologies. Her research resulted in several molecular imaging products that were successfully commercialized and are widely used in preclinical imaging centres worldwide. After completing her PhD in just three years, Oleksandra embarked on a postdoctoral project in image-guided surgery at the Netherlands Cancer Institute (NKI).

During her 2.5 years at NKI, Oleksandra contributed significantly to the development and clinical implementation of the first image-guidance system for mobile tumour targets during complex oncological surgeries. She also developed various surgical planning tools, which have since facilitated over 1,000 surgeries at the NKI. Following this, she pursued a clinical residency in medical physics at Leiden University Medical Centre (LUMC), where she focused on applying artificial intelligence (AI) for image processing and dosimetry optimization.

Over the next six years, Oleksandra’s work centred on personalized dosimetry, including the development of ultra-low-dose imaging protocols for vulnerable patient groups, Monte Carlo code for independent dose evaluation of new breast imaging scanner designs, and improving the understanding of uncertainties in time-activity curve modelling for radionuclide therapy. Her contributions have significantly advanced internal dosimetry in this area.

Since completing her residency in early 2022, Oleksandra has been coordinating radiation safety and personalized dosimetry within nuclear medicine at the University Medical Centre Groningen, the oldest and one of the largest nuclear medicine department in the country. She is also developing her own research line in multi-parametric dosimetry models to enhance therapy personalization in radionuclide therapy.

In addition to her professional work, Oleksandra is actively involved in science communication and philanthropy. She holds a board seat at the European Federation of Organizations for Medical Physics (EFOMP) and coordinates #ScienceForUkraine, one of the largest international initiatives supporting scientists affected by the war in Ukraine.