

## Researchers at EBEAM Centre publish a comprehensive review on direct graphene nanopatterning in the prestigious journal *Advanced Materials*

A research team has achieved a significant milestone with the publication of an extensive review article titled *Developments in Nanopatterning of Graphene Toward Direct Writing* in one of the most prestigious journals in the field of materials engineering – *Advanced Materials*. This journal is considered a world-leading platform and a highly respected reference for the professional community working in advanced materials and nanotechnology.

The published review focuses on one of the fastest developing areas in contemporary nanoelectronics – direct writing and prototyping of graphene without conventional photolithographic processes. The authors summarize the latest developments in technologies that enable spatially resolved graphene fabrication directly using focused electron beam induced deposition (FEBID), focused ion beam (FIB) modification, or laser-assisted graphene formation (LIG). The article discusses in depth the underlying physicochemical mechanisms, the role of precursor chemistry, substrate interactions, and irradiation parameters, as well as the benefits and technical limitations of these approaches. It shows that such direct-write methodologies may represent a

major step toward next-generation miniaturized electronic device fabrication. The review also presents a technological roadmap toward truly direct graphene writing without the need for post-annealing, masking, or transfer steps.

The review also benefited from the contributions of two young researchers, Szymon Abrahamczyk and Ondřej Sakreida, from the EBEAM Centre at the Nanotechnology Centre. The EBEAM Centre is dedicated to research in advanced electron-beam-based fabrication, including materials modification, nanoscale manufacturing, and functional graphene nanostructures, supported by modern instrumentation and international cooperation.

The publication represents an important achievement not only for the authors, but also for VSB–TUO and Nanotechnology Centre as a whole, further strengthening the university's growing international position in the fields of advanced materials and direct-write nanomanufacturing.