

ENSEMBLE³

From Czochralski to Metamaterials

The centre is implementing the project: „Centre of excellence for nanophotonics, advanced materials and novel crystal growth-based technologies”. The ENSEMBLE³ Centre of Excellence, or e3 for short, will combine crystal growth methods with the latest material concepts in nanophotonics, such as metamaterials, plasmonic materials and more.



ENSEMBLE³ – Centre of excellence for nanophotonics, advanced materials and novel crystal growth-based technologies



Prof. Dorota A. Pawlak



Crystal growth, advanced materials, nanophotonics, innovative technologies, materials science, bottom-up material technologies, self-organized materials, plasmonics, metamaterials

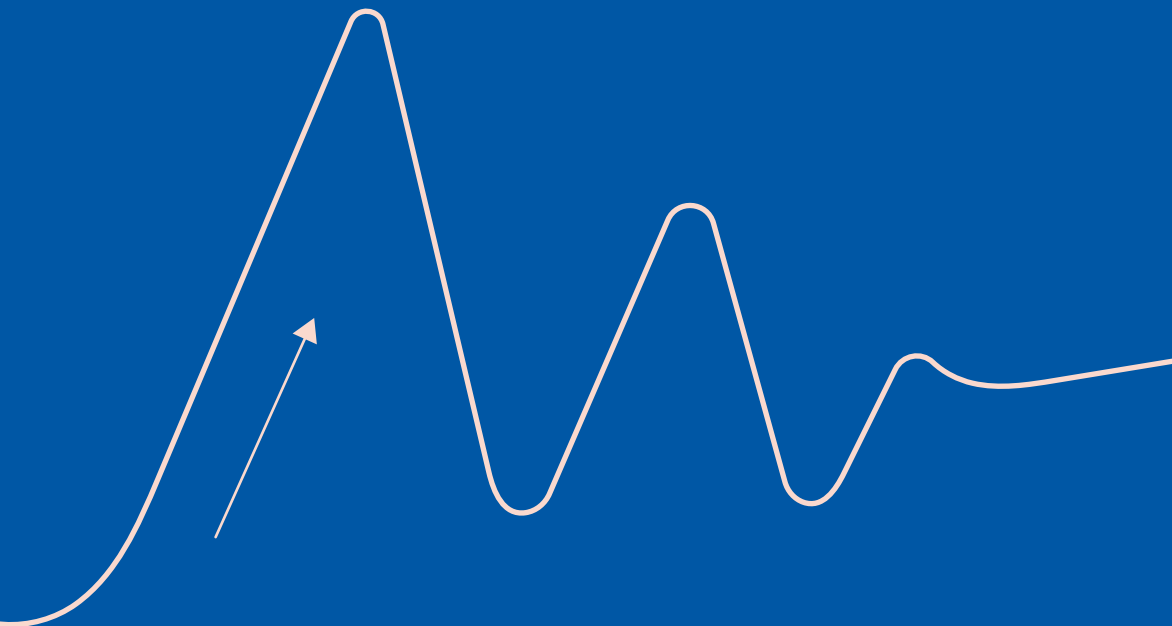


To develop new technologies and produce advanced photonic materials for applications in such fields as: optoelectronics, medicine, telecommunications, IT or energy conversion. ENSEMBLE³ will produce novel materials allowing new functionalities in these applications

Materials are the basis of any technology - silicon has been the foundation of electronics for many years, and there are new hopes for two-dimensional materials such as graphene, while the new photonic materials we are developing, such as metamaterials, will ensure the future development of many photonics-based fields – Prof. Dorota A. Pawlak.



Quotes





Dorota A. Pawlak (DAP), PhD DSc – Professor at the University of Warsaw; she graduated from the Faculty of Chemistry of the University of Warsaw. She worked at Tohoku University in Japan. For many years she has been with the Institute of Electronic Technology in Warsaw. Currently, she manages the Functional Materials Department in the Institute of Microelectronics and Photonics of the Łukasiewicz Research Network. She also heads the Materials Technology Laboratory at the Faculty of Chemistry, University of Warsaw. She is known for combining crystal growth methods with modern material concepts in photonics such as metamaterials or plasmonics. She was the coordinator of the first Polish project in the field of nanomaterials within the 7th Framework Programme of the European Union (2008-2012). She is a two-time winner of the TEAM programme of the Foundation for Polish Science. She is currently coordinating a project implemented as part of the EU's Teaming for Excellence (2019-2026). President of the Polish Society for Crystal Growth (2013-2016).

Every computer, mobile phone or other electronic device contains a piece of crystal in it. Most of these crystals were grown using a method developed in 1916 by Polish chemist Professor Jan Czochralski. Even today, it is the world's most widely used technique for producing semiconductor single crystals, especially silicon, to manufacture electronic devices. ENSEMBLE³, relying on this strength of Polish science and technology, intends to develop crystal growth methods and apply them for the development of new photonic materials.



Interesting facts



Foreign partners:

Sapienza University of Rome (Italy), Karlsruhe Institute of Technology (Germany) and Cooperative Research Center nanoGUNE Consolider (Spain)

Polish partners:

Łukasiewicz Institute of Microelectronics and Photonics (former Institute of Electronic Materials Technology), University of Warsaw, National Centre for Research and Development



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