



Press release | July 30, 2018

Dr. Ivan Minev receives an ERC Starting Grant of 1.5 million EUR to develop integrated multimodal brain implants

The European Research Council (ERC) has approved the research project "Integrated Implant Technology for Multimodal Brain Interfaces (IntegraBrain)" with a prestigious and highly competitive Starting Grant of 1.5 million EUR for 5 years. Dr. Ivan Minev, research group leader from the Biotechnology Center of TU Dresden (BIOTEC) and Freigeist-Fellow of the Volkswagen Foundation, wants to establish neuroprosthetic implants for the brain with electrical, chemical, thermal and optical functionalities.

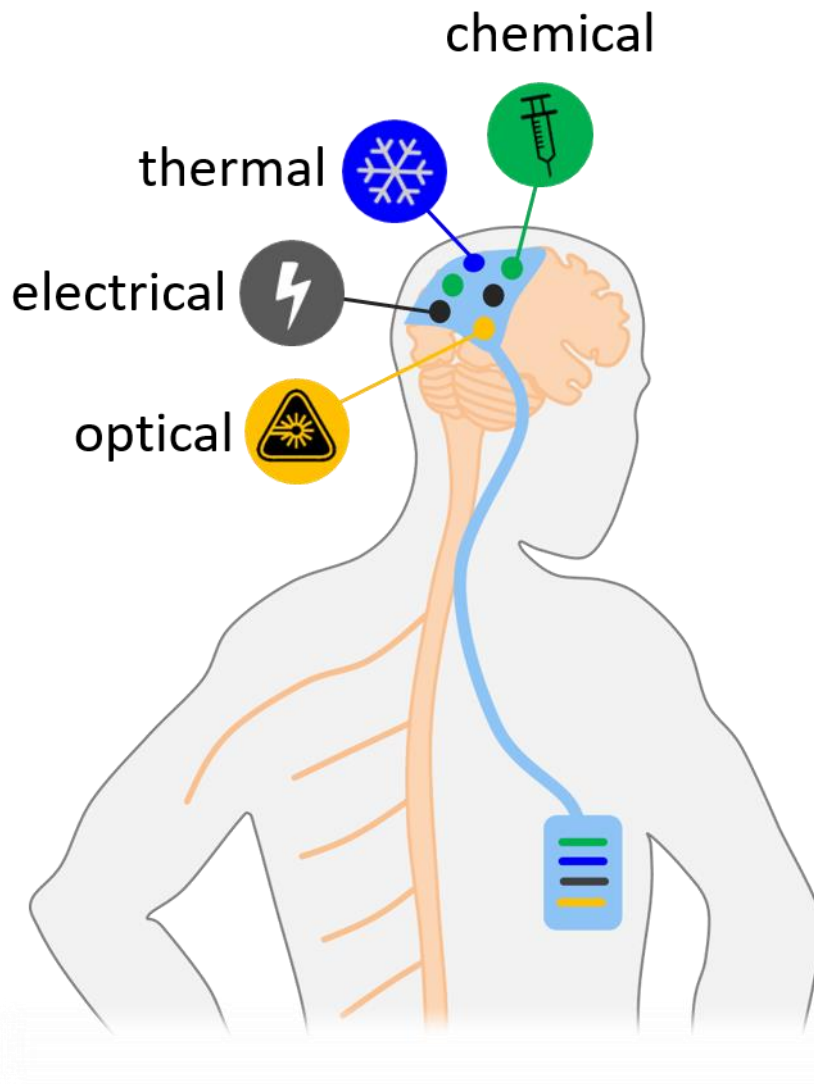
Dr. Ivan Minev's [ERC Starting Grant](#) project aims to build devices that enable hearing and speaking with the nervous system in several "languages". The special feature here is that neuronal tissue is treated not only as an electrical but also as a chemical, thermal and optical machine. Dr. Minev and his team aim to combine several sensing and actuation modules in an integrated implantable technology to investigate the combined effects of multimodal neuromodulation.

With the development of neuroprosthetic implants, the hope is to offer an alternative to systemic pharmacological treatment. The technology could potentially offer some unique advantages; its therapeutic action can be deployed rapidly, reversibly, in a graded fashion and only when needed. Neuromodulation can be targeted to a specific area and the multi-modal mix can be tuned to minimise side-effects. The therapeutic potential of IntegraBrain implants will be demonstrated in rats. A cortical surface implant will be used to detect and control focal seizures by a mix of medication, light and focal cooling. In peripheral nerves, visceral function control will be demonstrated.

Ivan Minev has been research group leader at BIOTEC since 2016 and works in the field of bioelectronics. He came to Dresden with the joint support of BIOTEC, the

Center for Advancing Electronics Dresden (cfaed), the Leibniz Institute of Polymer Research Dresden (IPF) and the Center for Regenerative Therapies Dresden (CRTD).

The Grant Office at the Center for Molecular and Cellular Bioengineering (CMCB), and the TU Dresden European Project Center closely supported Dr. Minev from the initial idea until submission of the application.



Vision for an integrated network of sensors and actuators for establishing brain-machine interfaces beyond the electrical functionality. © Ivan Minev



Dr. Ivan Minev © BIOTEC

Website of Dr. Ivan Minev

<http://www.biotec.tu-dresden.de/research/minev.html>

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The **Biotechnology Center** was founded in 2000 as a central scientific unit of the TU Dresden with the goal of combining modern approaches in molecular and cell biology with the traditionally strong engineering in Dresden. Since 2016 the BIOTEC is part of the central scientific unit "Center for Molecular and Cellular Bioengineering" (CMCB) of the TU Dresden. The BIOTEC plays a central role in the "Molecular Bioengineering and Regenerative Medicine" profile of the TU Dresden, fostering developments in the new field of Biotechnology/Biomedicine. The center focuses on cell biology, nanobiotechnology, and bioinformatics.

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