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Dr. Tudor Braniste is a former DAAD scholarship holder, now acting as a researcher at the National Center for Materials Study and Testing, Technical University of Moldova. He has experience in the field on nanotechnologies, particularly in fabrication and characterization of three dimensional nanoarchitectures based on Gallium Nitride (GaN and Ga_2O_3), fabrication of ultrathin membranes and micro-nanotubes for photonic, optoelectronic and memristor applications. His research interests include synthesis of multifunctional nanoparticles possessing both piezoelectric and magnetic properties and their possibility to remotely influence living cells and tissue.

"Electro-mechanical sensing properties of nanocomposite material based on Aero-GaN embedded in PDMS"

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National Center for Materials Study and Testing, Technical University of Moldova, Chisinau 2004, Republic of Moldova

This work reports on morphology and electro-mechanical sensing properties of the hybrid composite material based on Aero-GaN embedded into commercial silicone elastomer PDMS Sylgard 184. The network of interconnected aerotetrapods of GaN is wired with silver paint and completely embedded into PDMS. Electrical resistance of the Aero-GaN measured at different temperatures reflects the stress induced by the PDMS to the Aero-GaN network. Under application of forces of up to 5 Kg/cm^2, the electrical resistance increases. This phenomenon can be related to both piezoresistive effect of the GaN and to the spatial architecture of interconnected microtetrapods of the Aero-GaN whose spatial density decreases while punctiform uniaxial pressure is applied. This hypothesis is confirmed by the increased resistance under uniaxial stretching of the composite material.