

Ing. Gabriel Vanko, Ph.D.

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Location: [Cukrovarnická 10, Prague, CR](#)



Current occupation and related work experience

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- 2010 - 2024 Research fellow in the Dept. of Microelectronics and Sensors (formerly Dept. of Microelectronic Structures) at Institute of Electrical Engineering, Slovak Academy of Sciences, Bratislava, Slovakia; Topic: solving of problems in processing technology and integration of MEMS sensor structures with high electron mobility transistors on the basis of III-N material systems, development of new methods of electro-thermo-mechanic characterization of such sensor elements, verification of results in direct iteration with proposed electro-physical models.
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- 2008 – 2011 participation on solving of international project in the 7th Framework of European Commission – Materials for Roboust Gallium Nitride (MORGaN)
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- 2011 – 2014 participation of solving domestic projects of the Slovak Research and Development Agency – Advanced piezoelectric MEMS pressure sensors (PiezoMEMS) and Multifunctional detector arrays based on micro-mechanic structures (Multidetek)
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- 2011 – 2014 participation and coordination of domestic project of the Slovak Research and Development Agency – Transistors on the base of progressive materials for high temperatures (HotHEMT)
- 2015 – 2018 scientist in charge for Programme SASPRO - Mobility Programme of the Slovak Academy of Sciences dedicated for experienced scientists from abroad who are interested in working in the organizations of the Slovak Academy of Sciences.
- 2020 – 2023 participation in international projects of Horizon2020 (development of the atomic layer 3D plotter - <https://cordis.europa.eu/project/id/950785>), ERANET (Epitaxial transition metal dichalcogenides onto wide bandgap hexagonal superconductors for advanced electronics) and lead scientist in multilateral project within the call of Danube region DS-FR 2019 (Advanced Microcantilevers from Wide Bandgap Materials).
- 02/2024 – now Senior Research fellow at the Institute of Physics of the Czech Academy of Sciences, Prague, Czech Republic; Topic: wide bandgap materials and their heterostructures for advanced sensor applications.

Short-term research stays:

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- 2011 University of Bath – invited stay in order to optimize the design of a robust sensor „drumskin“ within the European project MORGaN;
- 2012 University of Applied Sciences in Vorarlberg – Scholarship Programme within the Action Austria – Slovakia awarded by Slovak Academic Information Agency;
- 2019 National Tsing-Hua University – invited stay within the Joint Research Programme between Taiwan and V4 countries, solving of project entitled “An individual stimulating system with 3D nano-structure carbon/graphene-based transducer and wireless heater for automated tiny insects behavior monitoring”

Education and research stays

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| 2000-2006 | Slovak University of Technology in Bratislava <ul style="list-style-type: none">• Field of Study: Microelectronics• Diploma thesis: Preparation and properties of AlGaIn/GaN HEMTs |
| 2006-2010 | PhD degree, Slovak University of Technology in Bratislava <ul style="list-style-type: none">• Field of Study: Microelectronics• Dissertation thesis: AlGaIn/GaN HEMT for sensor applications |
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Research interests

advanced piezoelectric MEMS pressure sensors, AlGaIn/GaN HEMTs, high temperature/high power electronic, heterostructures, 2D materials, electric measurements, transport properties of microelectronic devices.

Project managements and other activities:

Principal investigator of 3 domestic projects (APVV and VEGA) and 3 international projects (bilateral: SAS-CAS Mobility 2016-2017 and 2021-2022, multilateral: APVV-Danube strategy 2019). Member of exam commissions, chairman of the organizing committee of the ASDAM conference series, Member of the Research Council of the Institute of Electrical Engineering of the Slovak Academy of Sciences (2014-2022).

Publication activities

40 research articles in journals of CC, more than 40 publications in proceedings of international and national conferences, one patent application in Slovakia, citation index WOS: 661 citations, h-index: 15 (WOS 17/12/2024).

Selected recent articles

1. Izsák, T., Varga, M., Kočí, M., Szabó, O., Aubrechtová Dragounová, K., Vanko, G., Gál, M., Korčeková J., Hornychová, M., Poturnayová A., and Kromka, A.: Diamond-coated quartz crystal microbalance sensors: Challenges in high yield production and enhanced detection of ethanol and sars-cov-2 proteins, *Materials & Design* 248 (2024) 113474.
<https://doi.org/10.1016/j.matdes.2024.113474>
2. Adiputra, R., Chen, Y.-H., Wu, Shang, R., Vanko, G., Andok, R., and Tsai, H.-Y.: Study on fabrication of force transducer based on carbon nano-flake balls, *Nanotechnol.* 35 (2024) 035503.
<https://iopscience.iop.org/article/10.1088/1361-6528/ad0050>
3. Kočí, M., Izsák, T., Vanko, G., Sojková, M., Hrdá, J., Szabó, O., Husák, M., Végső, K., Varga, M., and Kromka, A.: Improved gas sensing capabilities of MoS₂/diamond heterostructures at room temperature, *ACS Applied Mater. Interfaces* 15 (2023) 34206.
<https://doi.org/10.1021/acsami.3c04438>
4. Gál, N., Hrubčín, L., Šagátová, A., Vanko, G., Kováčová, E., and Zaťko, B.: High-resolution alpha-particle detector based on Schottky barrier 4H-SiC detector operated at elevated temperatures up to 500 °C, *Applied Surface Sci* 635 (2023) 157708.
<https://doi.org/10.1016/j.apsusc.2023.157708>
5. Kundrata, I., Barr, M.K.S., Tymeck, S., Döhler, D., Hudec, B., Brüner, P., Vanko, G., Precner, M., Yokosawa, T., Spiecker, E., Plakhotnyuk, M., Fröhlich, K., and Bachmann, J.: Additive manufacturing in atomic layer processing mode, *Small Methods* (2022) 2101546.
<https://doi.org/10.1002/smt.202101546>