

# Curriculum Vitae

## Contact information

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## Professional career

- 2015- Group Leader, MTA EK NAP B Research Group for Implantable Microsystems, Institute for Technical Physics & Material Science, Centre for Energy Research, Hungarian Academy of Sciences
- 2014-2015 Alexander von Humboldt Postdoctoral Fellow, Microsystem Materials Laboratory, Department of Microsystem Engineering (IMTEK), University of Freiburg, Germany (12 months)
- 2009 - 2014 Research Fellow, Institute for Technical Physics & Material Science, Centre for Energy Research, Hungarian Academy of Sciences

## Education

- 2013. PhD in Electrical Engineering, Thesis: „Development and characterization of silicon microfluidic components and systems”, at Budapest University of Technology & Economics
- 2009. Msc in Electrical Engineering, Thesis: “Development of silicon microfluidics by the combination of proton beam writing and porous silicon micromachining”, at Budapest University of Technology & Economics

## Major Research Projects

- 2016-2020 Investigation of novel implant materials for high-resolution, multiparametric imaging of cortical activity (NKFIH 120143) - principal investigator (PI)
- 2015-2017 Optical stimulation of hippocampus and deep brain regions using novel micro- and nanomachining approaches, National Brain Research Program (KTIA NAP B 13-2-2015-0004) - PI
- 2015-2018 Understanding the impact of nanostructuring to control neural cell - solid surface interactions at brain-machine interfaces (OTKA NN 116550) – co-PI

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| 2013-2015 | Development of MEMS based measurement system for testing pharmaceuticals in freely moving rodents (industrial R&D project funded by Gedeon Richter Plc) - PI |
| 2011-2012 | THz range imager including sensors, processing elements and imaging setup (KTIA-OTKA-77564). - participant   |
| 2009-2012 | Polymer Photonic multiparametric biochemical SENSOR for Point of care diagnostics (EU FP7 ICT4-248304 P3SENS) - participant                                  |
| 2009-2012 | Nanoelectronics-based biosensor technology platforms (ENIAC JTI – CAJAL4EU 2009-1) – participant   |

### **Supervision of students**

15 Master & Bachelor student; 3 PhD students

### **Editorial Board Member for international journals**

EC Orthopaedics  
Open Engineering

### **Regular reviewer for international journals**

Sensors & Actuators A:Physical, Sensors & Actuators B:Chemical, Sensors (MDPI), Journal of Micromechanics & Microengineering, Microsystem Technologies, Scientific Reports

### **Awards**

- 2011 Young Investigator Award (Institute for Technical Physics & Material Science, HAS)
- 2013 Postdoctoral Fellowship, Hungarian Academy of Sciences
- 2013 Prize of the Memorial Foundation of György Ferenczi
- 2014 Postdoctoral Fellowship of the Alexander von Humboldt Foundation, Germany
- 2015 Return Fellowship of the Alexander von Humboldt Foundation, Germany
- 2016 Reviewer of the Year at Journal of Micromechanics & Microengineering, IOP Publishing

### **List of publications in peer-reviewed international journals**

Z. Fekete, M. Csernai, K. Kocsis, Á. Cs. Horváth, A. Pongrácz, P. Barthó, Simultaneous in vivo recording of local brain temperature and electrophysiological signals with a novel neural probe, Journal of Neural Engineering 14 (2017) 034001, IF: 3.465

Z. Fekete, A. Pongrácz, Multifunctional soft implants to monitor and control neural activity in the central and peripheral nervous system: a review, Sensors & Actuators B-Chemical 243 (2017) 1214-1223, IF: 5.401

Zs. Bérces, K. Tóth, G. Márton, I. Pál, B. Kováts-Megyesi, Z. Fekete, I. Ulbert, A. Pongrácz, Neurobiochemical changes in the vicinity of a nanostructured neural implant. *Scientific Reports* 6 (2016) 35944, IF: 4.259

G Márton, P Baracska, B Cseri, B Plósz, G Juhász, Z Fekete, A Pongrácz: A silicon-based microelectrode array with a microdrive for monitoring brainstem regions of freely moving rats, *Journal of Neural Engineering* 13 (2016) 026025, 2016, IF: 3.465

Z. Fekete, E. Pálfi, G. Márton, M. Handbauer, Zs. Bérces, I. Ulbert, A. Pongrácz, L. Négyessy, Combined in vivo recording of neural signals and iontophoretic injection of pathway tracers using a hollow silicon microelectrode, *Sensors & Actuators B-Chemical* 236 (2016) 815-824, IF: 5.401

M Kiss, P Földesy, Z Fekete, Optimization of a Michigan-type silicon microprobe for infrared neural stimulation, *SENSORS & ACTUATORS B: CHEMICAL* 224 (2016) 676-682, IF: 4.758

Z Fekete, Recent advances in silicon-based neural microelectrodes and microsystems, *SENSORS & ACTUATORS B: CHEMICAL* 2015 (2015) 300-315, IF: 4.758

I Rajta, R Huszánk, ATT Szabó, GUL Nagy, S Szilasi, P Fürjes, E Holczer, Z Fekete, G Járvás, M Szigeti, L Hajba, J Bodnár, A Guttman, Tilted pillar array fabrication by the combination of proton beam writing and soft lithography for microfluidic cell capture: Part 1 Design and feasibility, *ELECTROPHORESIS* 37 (2015) 498-503, IF: 2.482

Z Fekete, A. Németh, G. Márton, I. Ulbert, A. Pongrácz, Experimental study on the mechanical interaction between silicon neural microprobes and rat dura mater during insertion, *JOURNAL OF MATERIAL SCIENCE: MATERIALS SCIENCE IN MEDICINE* 26 pp. 70 (2015) IF: 2.587

Z Fekete, Technology of ultralong deep brain fluidic microelectrodes combined with etching-before-grinding, *Microsystem Technologies* 21 (2015) 341-344, IF: 0.974

Fürjes P, Holczer EG, Tóth E, Iván K, Fekete Z, Bernier D, Dortu F, Giannone D, PDMS microfluidics developed for polymer based photonic biosensors, *Microsystem Technologies* 21:(3) pp. 581-590. (2015), IF: 0.974

G Márton, I Bakos, Z Fekete, I Ulbert, A Pongrácz, Durability of high surface area platinum deposits on microelectrode arrays for acute neural recordings, *J Mater Sci Mater Med.* 25 (2014) 931-940, IF: 2.587

Z. Fekete, Á Cs Horváth, Zs. Bérces, A. Pongrácz: Black poly-silicon: a nanostructured seed layer for sensor applications, *Sensors and Actuators A: Physical* 216 (2014) 277-286, IF: 1.903

G Márton, Z Fekete, R Fiáth, P Baracska, I Ulbert, G Juhász, G Battistig, A Pongrácz: In vivo measurements with robust silicon based multielectrode arrays with extreme shaft lengths, *IEEE Sensors Journal* 13:(9) (2013) 3262, IF: 1.8

Z Fekete, Z Hajnal, G Márton, P Fürjes, A Pongrácz: Fracture analysis of silicon microprobes designed for deep-brain stimulation, *Microelectronic Engineering* 103 (2013) 160-166, IF: 1.338

A Pongrácz, Z Fekete, G Márton, Zs Bérces, I Ulbert, P Fürjes: Deep-brain silicon multielectrodes for simultaneous neural recording and drug delivery, *Sensors & Actuators B-Chemical* 189 (2013) 97-105, IF: 3.840

Z Fekete, A Pongrácz, P Fürjes, G Battistig: Improved process flow for buried channel fabrication in silicon, *Microsystem technologies* 18 (2012) 353-358, IF: 0.86

Z Fekete, P Nagy, G Huszka, F Tolner, A Pongrácz, P Fürjes: Performance characterization of micromachined particle separation system based on Zweifach-Fung effect, *Sensors and Actuators B-Chemical* 162 (2012) 89-94, IF: 3.535

Z Fekete, B Sinkovics, I Rajta, G A B Gál, P Fürjes, Characterization of the end-of-range geometric effects in complex 3D silicon micro-components formed by proton beam writing, *Journal of Micromechanics and Microengineering* 20: p. 064015. (2010), IF: 2.27

Rajta I, Szilasi SZ, Fürjes P, Fekete Z, Dücső Cs, Si micro-turbine by proton beam writing and porous silicon micromachining, *Nuclear Instruments & Methods In Physics Research Section B-Beam Interactions With Materials and Atoms* 267:(12-13) pp. 2292-2295. (2009), IF: 1.156