Curriculum Vitae

Barbora Špačková, Ph.D.

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Children: one child (born 2009), 2 years of maternity leave.

RESEARCH INTERESTS

Single molecule imaging, nanofluidics, nanophotonics, optical sensors and biosensors, mass-transport phenomena

EDUCATION

2007	Master degree in Physical Engineering Czech Technical University in Prague, Faculty of Nuclear Sciences and Physical Engineering, Department of Physical Electronics
2015	PhD in Physical Engineering Czech Technical University in Prague, Faculty of Nuclear Sciences and Physical Engineering, Department of Physical Electronics Thesis: Optical sensors based on surface plasmons Supervisor: Prof. Jiří Homola, Ph.D., DSc.

PROFESSIONAL EXPERIENCES

Sep. 2006 – Dec.2006	CAESAR - Center of Advanced European Studies and Research (Germany) Erasmus scholarship
2007 - 2015	The Czech Academy of Sciences, Institute of Photonics and Electronics (Czechia) PhD student
2015 - 2017	The Czech Academy of Sciences, Institute of Photonics and Electronics (Czechia) Postdoctoral fellow
2017 – 2019	Chalmers University of Technology, Physics Department (Sweden) Postdoc
2019 – 2021	Chalmers University of Technology, Physics Department (Sweden) Researcher
Sep. 2021 – Dec. 2021	University of Gothenburg, Department of Physics (Czechia) Researcher

2022 – present The Czech Academy of Sciences, Institute of Physics (Czechia)
Researcher

AWARD

Werner von Siemens Excellence Award 2015 for the PhD thesis

GRANT

2022 – 2024 GACR Czech Science Foundation
Life of a single biomolecule in a motion picture

PARTICIPATION IN INDUSTRIAL INNOVATION

Co-founder of Envue technologies AB – Swedish spin-off company founded at Chalmers University of Technology in 2020 (www.envue-technologies.com).

PATENT

B. Spackova, C. Langhammer, J. Fritzsche, System and method for detecting a presence of a particle in a fluid, submitted to PCT, PCT/EP2020/052499

PUBLICATIONS

Authored or co-authored 16 peer-reviewed international journal publications.
h-index: 11. Total citation: 824 times. (Google Scholar, 1/2/2022)

1. B. Špačková, H. Šípová-Jungová, M. Käll, J. Fritzsche, and C. Langhammer: *Nanoplasmonic–Nanofluidic Single-Molecule Biosensors for Ultrasmall Sample Volumes*, ACS Sensors, 2021. 6, 1, 73–82.
2. N.S. Lynn, T. Springer, J. Slabý, B. Špačková, M. Gráfová, M. L. Ermini, J. Homola, *Analyte transport to micro- and nano-plasmonic structures*, Lab on a chip, 2019. 19, 4117-4127.
3. B. Špačková, M. L. Ermini, J. Homola, *High-performance biosensor exploiting a light guidance in sparse arrays of metal nanoparticles*, Optics Letters, 2019. 44, 1568-1571.
4. H. Šípová-Jungová, L. Jurgová, K. Mrkvová, B. Špačková, J. Lamačová, J. Homola, *Biomolecular charges influence the response of surface plasmon resonance biosensors through electronic and ionic mechanisms*, Biosensors & Bioelectronics, 2019. 126, 365-372.
5. A. R. Ferhan, B. Špačková, J. A. Jackman, G. J. Ma, T. N. Sut, J. Homola, N.-J. Cho, *Nanoplasmonic Ruler for Measuring Separation Distance between Supported Lipid Bilayers and Oxide Surfaces*, Analytical Chemistry, 2019. 90, 12503-12511.
6. B. Špačková, N. S. Lynn Jr., J. Slabý, H. Šípová, and J. Homola: *A Route to Superior Performance of a Nanoplasmonic Biosensor: Consideration of Both Photonic and Mass Transport Aspects*, ACS Photonics, 2018. 5, 1019-1025.
7. D. Galvan, B. Špačková, J. Slabý, F. Sun, Y-H. Ho, J. Homola, and Q. Yu: *Surface-Enhanced Raman Scattering (SERS) on Gold Nanohole Arrays in Symmetrical Dielectric Environments Exhibiting Electric Field Extension*, Journal of Physical Chemistry C, 2016. 120, 25519–25529.

8. B. Špačková, P. Wrobel, M. Bocková, J. Homola: *Optical biosensors based on plasmonic nanostructures: a review*, Proceedings of the IEEE, 2016. 104, 2380–2408.
9. J. A. Jackman, B. Špačková, E. Linardy, M. C. Kim, B. K. Yoon, J. Homola, N. J. Cho, *Nanoplasmonic ruler to measure lipid vesicle deformation*. Chemical Communications, 2016. 52, 76-79.
10. T. Špringer, M. L. Ermini, B. Špačková, J. Jabloňová, J. Homola, *Enhancing Sensitivity of SPR Biosensors by Functionalized Gold Nanoparticles – Size Matters*. Analytical Chemistry, 2014. 86, 10350-10356.
11. B. Špačková, P. Lebrušková, H. Šípová, P. Kwiecien, I. Richter, and J. Homola, *Ambiguous refractive index sensitivity of Fano resonance on an array of gold nanoparticles*. Plasmonics, 2014. 9, p. 729-735.
12. H. Vaisocherová, V. Ševců, P. Adam, B. Špačková, K. Hegnerová, A. de los S. Pereira, C. Rodriguez-Emmenegger, T. Riedel, M. Houska, E.Brynda, J. Homola, *Functionalized ultra-low fouling carboxy- and hydroxy-functional surface platforms: functionalization capacity, biorecognition capability and resistance to fouling from undiluted biological media*. Biosensors & Bioelectronics, 2014. 51: p. 150-157.
13. Y. H. Jang, K. Chung, L. N. Quan, B. Špačková, H. Šípová, S. Moon, W. J. Cho, H. Y. Shin, Y. J. Jang, J. E. Lee, S. T. Kochuveedu, M. J. Yoon, J. Kim, S. Yoon, J. K. Kim, D. Kim, J. Homola, and D. H. Kim, *Configuration-controlled Au nanocluster arrays on inverse micelle nano-patterns: versatile platforms for SERS and SPR sensors*. Nanoscale, 2013. 5(24), p. 12261-12271.
14. B. Špačková, and J. Homola, *Sensing properties of lattice resonances of 2D metal nanoparticle arrays: An analytical model*. Optics Express, 2013. 21(22): p. 27490-27502.
15. B. Špačková, and J. Homola, *Theoretical analysis of a fiber optic surface plasmon resonance sensor utilizing a Bragg grating*. Optics Express, 2009. 17(25): p. 23254-23264.
16. B. Špačková, M. Piliarik, P. Kvasnička, C. Themistos, M. Rajarajan, and J. Homola, *Novel concept of multi-channel fiber optic surface plasmon resonance sensor*. Sensors and Actuators B-Chemical, 2009. 139(1): p. 199-203.