

Institute of Technical Physics and Materials
Science

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Robert Horvath, PhD



https://www.researchgate.net/profile/Robert_Horvath5

<https://scholar.google.com/citations?user=PUty9hcAAAAJ&hl=en>

Personal data

Date of birth: 25th of August 1974

Place of birth: Gyöngyös, Hungary

Citizenship: Hungarian

Family status: Married, 2 children (Virág Anna, Born: 2004;
Tünde Rebeka, born 2012)

Education

Sep 1999 – Sep 2000 **University of Copenhagen**
visiting PhD, Graduate School of Biophysics
, Denmark

Sep 1992 – Sep 2001 **Eötvös Loránd University**
MSc, PhD, Physics and Biophysics
Budapest, Hungary

Research Experience

- Jul 2012 – present* **Head of Nanobiosensorics Laboratory and Momentum Fellowship holder**
Hungarian Academy of Sciences, Institute of Technical Physics and Materials
Science
Budapest, Hungary
- Oct 2008 – Sep 2012* **Senior Researcher, Marie Curie and OTKA Fellowships holder**
Hungarian Academy of Sciences, Institute of Technical Physics and Materials
Science
Budapest, Hungary
- Sep 2006 – Oct 2008* **Marie Curie Postdoctoral Fellow**
Cranfield University,
Cranfield, United Kingdom
- Jan 2002 – Sep 2006* **Postdoctoral Fellow and Talent Project Award holder**
Technical University of Denmark, Risoe - Optics and Fluid Dynamics
Kongens Lyngby, Denmark

Statistics

H-factor 38
Impact Factor 500+
Citations 4000+

Teaching:

Modern Physical Laboratory (at Eötvös University: 1998-1999)

Optical Waveguides Laboratory (at Eötvös University: 1997-1999 and 2000-2001)

Lecture series on optical biosensing (including laboratory demonstrations)

(Montpellier University (France), 2006)

Invited lecturer at several courses at Pannon University, Technical University of Budapest and at Eötvös University in the topic of nanotechnology, nanofabrication and non-invasive biological and chemical sensors (2008 - present)

Skills & Activities

Skills Waveguides, Optics and Photonics, Biosensors, Integrated Optics, Nanofabrication, Biosensing, Applied Optics, Optical Sensing, Cell Adhesion, Diffraction, Biosensor Development, Cell-based Biosensors, Protein Adsorption, Label-Free Biosensors, Thin Films and Nanotechnology, Single-cell, Single-cell Manipulation, Robotic FluidFM

Languages Hungarian, English, Russian, Danish

Scientific Memberships Hungarian Biophysical Society - Board Member

Hungarian Vacuum Society - Member

VAEB Nanotechnology - Board Member

Biosensors – Editorial Board Member

Sensors International – Editorial Board Member

Scientific Reports - Editorial Board Member

Frontiers in Cell and Developmental Biology - Editorial Board Member

Awards, fellowship & ongoing projects:

Three-year PhD fellowship award from the Hungarian Government |

*One-year Visiting Student Fellowship from the Graduate School of Biophysics
(Copenhagen University, Denmark) |*

Two-year Talent Project Award from the Danish Technical Research Council |

*Two-year Marie Curie EIF Fellowship (OPTICELL) in association with Cranfield
University (UK) |*

Three-year OTKA PD Fellowship (2008) |

Three-year Marie Curie Reintegration Fellowship (2008) |

*Numerous travel awards to participate on conferences and advanced schools in the topics
of biophysics, optics, biomedical surfaces and stem cell research |*

*ERC Starting Independent Research Grant interview (2010, 2014) (At both times the
project application received "category A, excellent and recommended for funding |*

Bolyai Research Award for excellence (2012) |

*Momentum Research Award for Excellence from the Hungarian Academy of Sciences
(2012) |*

Award for excellence in reviewing from Sensors and Actuators B (2013) |

*All together 10+ prices for excellence in student supervision from various Hungarian
Universities |*

Frontiers and Thematic excellence projects (NKFIH) – ongoing

Refereeing:

*Applied Physics Letters | ACS Journals | Applied Surface Science | Biosensors | Biosensors
and Bioelectronics | IEEE Sensors | Journal of Colloids and Interface Science | Journal of Optics
A | Journal of Physical Chemistry | Journal of Physics D- Applied Physics | Journal of
Micromechanics and Microengineering | Nanotechnology | Nature Communications |
Proteomics | RSC Journals | Sensors and Actuators A,B | Micromachines | Measurement
Science and Technology | New Journal of Physics | Optics Express | Various IOP journals |
PRX | Analytica Chemistry | Langmir | Various National Research Councils (OTKA,
NKFIH) and Foreign Research Councils | European Research Council | ERC Advanced and
Starting grant applications*

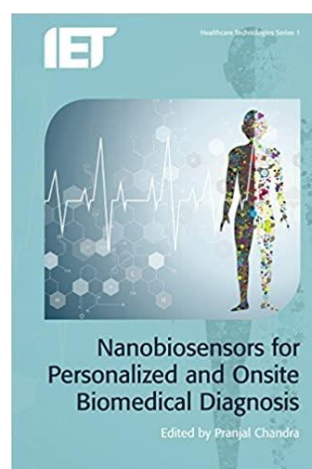
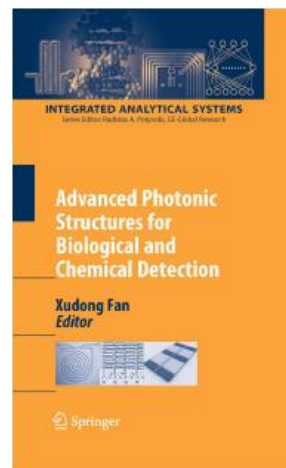
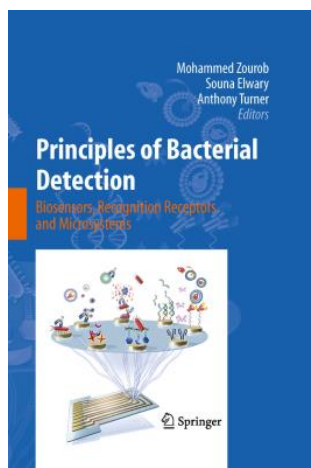
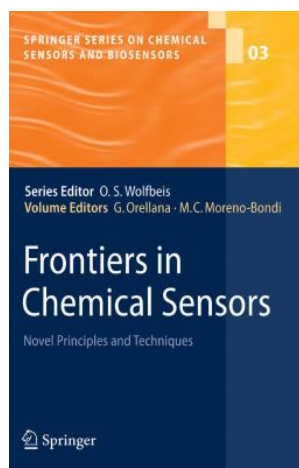
Present research interests

Robert Horvath is the founder and leader of the Nanobiosensorics Laboratory at CER HUN-REN in Budapest, Hungary. The laboratory's primary focus is on developing and applying label-free optical biosensors for proteins and living cells. In collaboration with a Swiss startup, Creoptix AG, they have developed Grating-Coupled Interferometry, a label-free optical biosensor with exceptional sensitivity that can monitor real-time binding kinetics of ions to proteins. They also develop and utilize microplate-based optical methods, specifically resonant waveguide gratings, and employ novel imaging techniques, such as quantitative phase imaging, to assess cellular adhesion on various surfaces and under external stimuli. These techniques enable the monitoring of cellular events, including adhesion, invasion, and migration, at both the single-cell and population levels, allowing for the identification and characterization of subpopulations with distinct characteristics.

Another significant area of research revolves around single-cell manipulation, which encompasses adhesion measurements on individual cells and the isolation of adhering and suspended cells for biomolecular characterization. They utilize robotic fluidic force microscopy (robotic FluidFM) and computer-controlled micropipettes in close collaboration with industry partners, including Cytosurge AG (CH) and Cellsorter Inc. (HU). With robotic FluidFM, they have the capability to inject various materials, such as metal nanoparticles and vesicles, into individual cells with a high degree of precision. Additionally, they can perform tiny cytoplasmic biopsies without harming the sampled cells. The combination of microplate-based optical sensors and robotic FluidFM has enabled them to calibrate the biosensor signals to adhesion force, opening the door to single-cell adhesion kinetic measurements with unparalleled throughput and sensitivity.

In the realm of cancer research, the laboratory initially established a methodology for determining the affinity constant and kinetic rates of integrin receptor-ligand interactions in living cells, all without the need for labeling and receptor isolation. Similarly, the laboratory made a notable discovery concerning the regulatory role of the glycocalyx layer in cancer cells during cancer cell adhesion and nanoparticle uptake. These findings have the potential for further applications in biotechnology, nanomedicine, medical diagnostics, and basic biological research.

Books - Invited Book Chapters



T. Gerecsei, B. Péter, R. Ungai-Salánki, S. Kurunczi, I. Székács, B. Szabó, and R. Horvath, "Prospects of fluidic force microscopy and related biosensors for medical applications," in **Nanobioanalytical Approaches to Medical Diagnostics**, 2022, pp. 1–28.

Inna Székács, Robert Horvath, András Székács: *Label-Free Optical Biosensors for Monitoring Cellular Processes and Cytotoxic Agents at Interfaces Using Guided Modes and Advanced Phase-Contrast Imaging Techniques*. **Biosensors for Security and Bioterrorism Applications**, Edited by Dimitrios P. Nikolelis, Georgia-Paraskevi Nikoleli, 03/2016; Springer International Publishing., ISBN: 978-3-319-28926-7, DOI:10.1007/978-3-319-28926-7_21

Norbert Orgovan, Beatrix Peter, Szilvia Bösze, Jeremy J. Ramsden, Bálint Szabó, Robert Horvath: *Label-Free Profiling of Cell Adhesion: Determination of the Dissociation Constant for Native Cell Membrane Adhesion Receptor-Ligand Interaction*. **Label-Free Biosensor Methods in Drug Discovery**, 1st edited

by Ye Fang, 01/2015: chapter 18; Springer New York., ISBN: 978-1-4939-2617-6, DOI:10.1007/978-1-4939-2617-6_18

Mohammed Zourob, Nina Skivesen, Robert Horvath, Stephan Mohr, Nicholas J. Goddard: *Deep-Probe Optical Waveguides for Chemical and Biosensors*. **Advanced Photonic Structures for Biological and Chemical Detection**, Integrated Analytical Systems, 01/2009; Springer-Verlag New York., ISBN: ISBN 978-0-387-98060-7, DOI:10.1007/978-0-387-98063-8_15

Mohammed Zourob, Nina Skivesen, Robert Horvath, Stephan Mohr, Martin B. McDonnell, Nicholas J. Goddard: *Integrated Deep-Probe Optical Waveguides for Label Free Bacterial Detection*. **Principles of Bacterial Detection: Biosensors, Recognition Receptors and Microsystems**, Edited by Mohammed Zourob, Souna Elwary, Anthony Turner, 01/2008; Springer-Verlag New York., ISBN: 978-0-387-75112-2, DOI:10.1007/978-0-387-75113-9_8

Róbert Horváth, Nina Skivesen, Niels B. Larsen, Henrik C. Pedersen: *Reverse Symmetry Waveguide for Optical Biosensing*. **Frontiers in Chemical Sensors**, 01/2006; DOI:10.1007/3-540-27757-9_9

List of publications

(with review papers in **BOLD**)

- [1]A. Bányai, E. Farkas, H. Jankovics, I. Székács, E. L. Tóth, F. Vonderviszt, R. Horváth, M. Varga, and P. Fürjes, “Dean-Flow Affected Lateral Focusing and Separation of Particles and Cells in Periodically Inhomogeneous Microfluidic Channels,” *SENSORS*, vol. 23, no. 2, 2023.
- [2]I. Bányász, I. Rajta, V. Havránek, A. Mackova, A. J. Laki, M. S. Z. Kellermayer, Z. Szittner, S. Kurunczi, S. Novák, I. Székács, R. Horváth, M. Fried, and G. U. L. Nagy, “Design, fabrication, and characterization of picowell arrays on cyclic olefin copolymer surfaces generated with a 10.5 MeV N⁴⁺ ion microbeam,” *APPLIED PHYSICS LETTERS*, vol. 123, no. 5, 2023.
- [3]B. Peter, N. Kanyo, K. D. Kovacs, V. Kovács, I. Szekacs, B. Pécz, K. Molnár, H. Nakanishi, I. Lagzi, and R. Horvath, “Glycocalyx Components Detune the Cellular Uptake of Gold Nanoparticles in a Size- and Charge-Dependent Manner,” *ACS APPLIED BIO MATERIALS*, vol. 6, no. 1, pp. 64–73, 2023.
- [4]B. Péter, B. Majoros, S. Kurunczi, A. V. Ács, I. Szekacs, S. Bősze, G. M. Kovács, I. Boldizsár, and R. Horvath, “Label-free biosensing of lignans for therapeutics using engineered model surfaces,” *INTERNATIONAL JOURNAL OF BIOLOGICAL MACROMOLECULES*, vol. 233, 2023.
- [5]M. Wasilewska, A. Michna, A. Pomorska, K. Wolski, S. Zapotoczny, E. Farkas, Z. Szittner, I. Szekacs, and R. Horvath, “Polysaccharide-based nano-engineered multilayers for controlled cellular adhesion in label-free biosensors,” *INTERNATIONAL JOURNAL OF BIOLOGICAL MACROMOLECULES*, vol. 247, 2023.
- [6]M. Barbara, P. Beatrix, B. Imre, B. Szilvia, S. Inna, K. Sándor, and H. Robert, “Grating Coupled Interferometry (GCI) for kinetic interaction analysis of small molecules and their target proteins.” 2022.
- [7]P. Beatrix, S. Inna, B. Szilvia, B. Imre, M. K. Gábor, and H. Robert, “Label-free discovery of natural compounds as target biomolecules in cellular adhesion and migration.” 2022.
- [8]G. Borbála, T. Eszter, S. Inna, F. Enikő, H. Robert, K. Szandra, and S. András, “A NEWLY IDENTIFIED SPECIFIC BIOLOGICAL ACTIVITY OF GLYPHOSATE – INHIBITION OF RGD-BINDING INTEGRINS,” in *Proceedings of the 28th International Symposium on Analytical and Environmental Problems*, 2022, pp. 147–151.
- [9]F. Eniko, T. Robert, G. Tamás, S. Andras, D. K. Kinga, S. Balazs, D. Judit, P. Beatrix, K. Sandor, S. Inna, B. Attila, B. Anita, F. Péter, R.-S. Szilvia, V. Máté, S. Barnabás, O. Eszter, S. Dóra, and H. Robert, “Label-free optical biosensor method for detailed analysis of bacteria repellent and adhesive surfaces.” 2022.

- [10]E. Farkas, R. Tarr, T. Gerecsei, A. Saftics, K. D. Kovács, B. Stercz, J. Domokos, B. Peter, S. Kurunczi, I. Szekacs, A. Bonyár, A. Bányai, P. Fürjes, S. Ruszkai-Szaniszló, M. Varga, B. Szabó, E. Ostorházi, D. Szabó, and R. Horvath, "Development and In-Depth Characterization of Bacteria Repellent and Bacteria Adhesive Antibody-Coated Surfaces Using Optical Waveguide Biosensing," *BIOSENSORS*, vol. 12, no. 2, 2022.
- [11]B. Gémes, E. Takács, I. Székács, E. Farkas, R. Horvath, S. Klátyik, and A. Székács, "A glyphosate és szerkezeti analógjai antagonistá hatásainak vizsgálata RGD-specifikus integrinokkal," *ÖKOTOXIKOLÓGIA*, vol. 4, no. 3–4, pp. 61–66, 2022.
- [12]B. Gémes, E. Takács, I. Székács, R. Horvath, and A. Székács, "Comparative Assessment of the Inhibitory Potential of the Herbicide Glyphosate and Its Structural Analogs on RGD-Specific Integrins Using Enzyme-Linked Immunosorbent Assays," *INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES*, vol. 23, no. 20, 2022.
- [13]T. Gerecsei, B. Péter, R. Ungai-Salánki, S. Kurunczi, I. Székács, B. Szabó, and R. Horvath, "Prospects of fluidic force microscopy and related biosensors for medical applications," in *Nanobioanalytical Approaches to Medical Diagnostics*, 2022, pp. 1–28.
- [14]T. Gerecsei, R. Ungai-Salánki, A. Saftics, I. Derényi, R. Horvath, and B. Szabó, "Characterization of the Dissolution of Water Microdroplets in Oil," *COLLOIDS AND INTERFACES*, vol. 6, no. 1, 2022.
- [15]R. Horvath, "Single-cell temporal transcriptomics from tiny cytoplasmic biopsies," *CELL REPORTS METHODS*, vol. 2, no. 10, 2022.
- [16]N. Kanyo, K. D. Kovács, S. V. Kovács, B. Béres, B. Peter, I. Székács, and R. Horvath, "Single-cell adhesivity distribution of glycocalyx digested cancer cells from high spatial resolution label-free biosensor measurements," *MATRIX BIOLOGY PLUS*, vol. 14, 2022.
- [17]O. Marianna, F. Enikő, S. Inna, H. Robert, K. Szandra, and S. András, "DETAILED CYTOTOXICITY ASSESSMENT OF THE FORMULATED HERBICIDE ROUNDUP CLASSIC AND ITS CONSTITUENTS," in *Proceedings of the 28th International Symposium on Analytical and Environmental Problems*, 2022, pp. 269–273.
- [18]W. Monika, M. Aneta, P. Agata, F. Enikő, S. Inna, and H. Robert, "Electrokinetic, viscoelastic and optical properties of the biocompatible multilayers based on polysaccharides – the impact of the films on the cell adhesion." 2022.
- [19]A. G. Nagy, N. Kanyo, A. Voros, I. Szekacs, A. Bonyar, and R. Horvath, "Population distributions of single-cell adhesion parameters during the cell cycle from high-throughput robotic fluidic force microscopy," *SCIENTIFIC REPORTS*, vol. 12, no. 1, 2022.
- [20]Á. G. Nagy, I. Székács, A. Bonyár, and R. Horvath, "Cell-substratum and cell-cell adhesion forces and single-cell mechanical properties in mono- and multilayer assemblies from robotic fluidic force microscopy," *EUROPEAN JOURNAL OF CELL BIOLOGY*, vol. 101, no. 4, 2022.
- [21]Á. G. Nagy, I. Székács, A. Bonyár, and R. Horvath, "Simple and automatic monitoring of cancer cell invasion into an epithelial monolayer using label-free holographic microscopy," *SCIENTIFIC REPORTS*, vol. 12, no. 1, 2022.

- [22]M. Oláh, E. Farkas, I. Székács, R. Horvath, S. Klátyik, and A. Székács, "A Roundup Classic gyomirtó szer és összetevői citotoxikus hatásainak vizsgálata," *ÖKOTOXIKOLÓGIA*, vol. 4, no. 3–4, pp. 54–60, 2022.
- [23]M. Oláh, E. Farkas, I. Székács, R. Horvath, and A. Székács, "Cytotoxic effects of Roundup Classic and its components on NE-4C and MC3T3-E1 cell lines determined by biochemical and flow cytometric assays," *TOXICOLOGY REPORTS*, vol. 9, pp. 914–926, 2022.
- [24]B. Peter, N. Kanyo, I. Szekacs, A. Csampai, S. Bosze, and R. Horvath, "Epigallocatechin-gallate tailors the cell adhesivity of fibronectin coatings in oxidation and concentration-dependent manner," *MATERIALS ADVANCES*, vol. 3, no. 23, pp. 8684–8694, 2022.
- [25]**B. Péter, E. Farkas, S. Kurunczi, Z. Szittner, S. Bősze, J. J. Ramsden, I. Szekacs, and R. Horvath, "Review of Label-Free Monitoring of Bacteria: From Challenging Practical Applications to Basic Research Perspectives," *BIOSENSORS*, vol. 12, no. 4, 2022.**
- [26]**Z. Szittner, B. Péter, S. Kurunczi, I. Székács, and R. Horváth, "Functional blood cell analysis by label-free biosensors and single-cell technologies," *ADVANCES IN COLLOID AND INTERFACE SCIENCE*, vol. 308, 2022.**
- [27]G. Tamás, V. Tamás, D. K. Kinga, P. Beatrix, K. Sándor, K. Anna, N. Krisztina, L. Dorina, V. V. Krisztina, L. Péter, S. Inna, I. B. Edit, and H. Robert, "Nanoinjection of fluorescent nanoparticles to single live cells by robotic fluidic force microscopy." 2022.
- [28]Á. Gábor Nagy, N. Pap, R. Horvath, and A. Bonyár, "Determination of the Resonance Frequency and Spring Constant of FluidFM Cantilevers with Numerical Simulations," in 2021 44th International Spring Seminar on Electronics Technology (ISSE), 2021.
- [29]T. Gerecsei, P. Chrenkó, N. Kanyo, B. Péter, A. Bonyár, I. Székács, B. Szabo, and R. Horvath, "Dissociation Constant of Integrin-RGD Binding in Live Cells from Automated Micropipette and Label-Free Optical Data," *BIOSENSORS*, vol. 11, no. 2, 2021.
- [30]K. Kliment, I. Székács, B. Peter, A. Erdei, I. Kurucz, and R. Horvath, "Label-free real-time monitoring of the BCR-triggered activation of primary human B cells modulated by the simultaneous engagement of inhibitory receptors," *BIOSENSORS & BIOELECTRONICS*, vol. 191, 2021.
- [31]B. Kovacs, F. A. Kraft, Z. Szabo, Y. Nazirizadeh, M. Gerken, and R. Horvath, "Near cut-off wavelength operation of resonant waveguide grating biosensors," *SCIENTIFIC REPORTS*, vol. 11, no. 1, 2021.
- [32]K. D. Kovács, M. Novák, Z. Hajnal, C. Hős, B. Szabó, I. Székács, Y. Fang, A. Bonyár, and R. Horvath, "Label-free tracking of whole-cell response on RGD functionalized surfaces to varied flow velocities generated by fluidic rotation.," *JOURNAL OF COLLOID AND INTERFACE SCIENCE*, vol. 599, pp. 620–630, 2021.

- [33]H. S. Lawson, G. Holló, N. Német, S. Teraji, H. Nakanishi, R. Horvath, and I. Lagzi, "Design of non-autonomous pH oscillators and the existence of chemical beat phenomenon in a neutralization reaction," *SCIENTIFIC REPORTS*, vol. 11, no. 1, 2021.
- [34]Á. G. Nagy, R. Horvath, A. Bonyár, and M. Sztilkovics, "A custom Software for the Evaluation of Single-Cell Force-Spectroscopy Data Acquired by FluidFM BOT," in *2021 IEEE 27th International Symposium for Design and Technology in Electronic Packaging (SIITME)*, 2021, pp. 272–274.
- [35]M. Oláh, E. Farkas, I. Székács, R. Horvath, and A. Székács, "A Roundup Classic és összetevőinek citotoxikus és genotoxikus hatásai NE-4C és MC3T3-E1 sejtvonalakon," *ÖKOTOXIKOLÓGIA*, vol. 3, no. 2, pp. 18–19, 2021.
- [36]B. Péter, I. Boldizsár, G. M. Kovács, A. Erdei, Z. Bajtay, A. Vörös, J. J. Ramsden, I. Szabó, S. Bősze, and R. Horvath, "Natural Compounds as Target Biomolecules in Cellular Adhesion and Migration: From Biomolecular Stimulation to Label-Free Discovery and Bioactivity-Based Isolation," *BIOMEDICINES*, vol. 9, no. 12, 2021.**
- [37]A. Saftics, S. Kurunczi, B. Peter, I. Szekacs, J. J. Ramsden, and R. Horvath, "Data evaluation for surface-sensitive label-free methods to obtain real-time kinetic and structural information of thin films: A practical review with related software packages," *ADVANCES IN COLLOID AND INTERFACE SCIENCE*, vol. 294, 2021.**
- [38]R. Ungai-Salánki, E. Haty, T. Gerecsei, B. Francz, B. Béres, M. Sztilkovics, I. Székács, B. Szabó, and R. Horvath, "Single-cell adhesion strength and contact density drops in the M phase of cancer cells," *SCIENTIFIC REPORTS*, vol. 11, no. 1, 2021.
- [39]R. Ungai-Salánki, B. Csippa, T. Gerecsei, B. Péter, R. Horvath, and B. Szabó, "Nanonewton scale adhesion force measurements on biotinylated microbeads with a robotic micropipette.," *JOURNAL OF COLLOID AND INTERFACE SCIENCE*, vol. 602, pp. 291–299, 2021.
- [40]M. L. Debreczeni, I. Szekacs, B. Kovacs, A. Saftics, S. Kurunczi, P. Gál, J. Dobó, L. Cervenak, and R. Horvath, "Human primary endothelial label-free biochip assay reveals unpredicted functions of plasma serine proteases," *SCIENTIFIC REPORTS*, vol. 10, no. 1, 2020.
- [41]B. Francz, R. Ungai-Salánki, É. Sautner, R. Horvath, and B. Szabó, "Subnanoliter precision piezo pipette for single-cell isolation and droplet printing," *MICROFLUIDICS AND NANOFUIDICS*, vol. 24, no. 2, 2020.
- [42]H. Jankovics, B. Kovacs, A. Saftics, T. Gerecsei, É. Tóth, I. Szekacs, F. Vonderviszt, and R. Horvath, "Grating-coupled interferometry reveals binding kinetics and affinities of Ni ions to genetically engineered protein layers," *SCIENTIFIC REPORTS*, vol. 10, no. 1, 2020.
- [43]N. Kanyo, K. D. Kovacs, A. Saftics, I. Szekacs, B. Peter, A. R. Santa-Maria, F. R. Walter, A. Dér, M. A. Deli, and R. Horvath, "Glycocalyx regulates the strength and kinetics of cancer cell adhesion revealed by biophysical models based on high resolution label-free optical data," *SCIENTIFIC REPORTS*, vol. 10, no. 1, 2020.

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- [47]B. Peter, A. Saftics, B. Kovacs, S. Kurunczi, and R. Horvath, "Oxidization increases the binding of EGCG to serum albumin revealed by kinetic data from label-free optical biosensor with reference channel," *ANALYST*, vol. 145, no. 2, pp. 588–595, 2020.
- [48]A. Saftics, B. Türk, A. Sulyok, N. Nagy, E. Agócs, B. Kalas, P. Petrik, M. Fried, N. Khánh, A. Prós, K. Kamarás, I. Szekacs, R. Horvath, and S. Kurunczi, "Dextran-based Hydrogel Layers for Biosensors," in *Nanobiomaterial Engineering*, 2020, pp. 139–164.
- [49]M. Sztilkovics, T. Gerecsei, B. Peter, A. Saftics, S. Kurunczi, I. Szekacs, B. Szabo, and R. Horvath, "Single-cell adhesion force kinetics of cell populations from combined label-free optical biosensor and robotic fluidic force microscopy," *SCIENTIFIC REPORTS*, vol. 10, no. 1, 2020.
- [50]T. Gerecsei, I. Erdődi, B. Peter, C. Hős, S. Kurunczi, I. Derényi, B. Szabó, and R. Horvath, "Adhesion force measurements on functionalized microbeads: An in-depth comparison of computer controlled micropipette and fluidic force microscopy," *JOURNAL OF COLLOID AND INTERFACE SCIENCE*, vol. 555, pp. 245–253, 2019.
- [51]B. Kakasi, T. Gerecsei, B. Kovács, R. Horváth, H. Jankovics, and F. Vonderviszt, "Flagellin-based monolayers with tuneable characteristics for cell adhesion studies." 2019.
- [52]B. Kovacs and R. Horvath, "Modeling of Label-Free Optical Waveguide Biosensors with Surfaces Covered Partially by Vertically Homogeneous and Inhomogeneous Films," *JOURNAL OF SENSORS*, vol. 2019, 2019.
- [53]A. G. Nagy, J. Kaman, R. Horvath, and A. Bonyar, "Spring constant and sensitivity calibration of FluidFM micropipette cantilevers for force spectroscopy measurements (vol 9, 10287, 2019)," *SCIENTIFIC REPORTS*, vol. 9, 2019.
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