Curriculum vitae

Personal information

Name Rokas

Surname Žalnėravičius

Address Tvankstos st. 12-35, Vilnius, Lithuania

Phone No. +37063431029

E-mail rokas.zalneravicius@gmc.vu.lt; rzalneravicius@gmail.com

Nationality Lithuanian

Date of birth 1990 10 03

Gender Male

Education

2015-2020

- PhD in Chemistry at the Center for Physical Sciences and Technology, Institute of Chemistry, Department of Nanomaterials and Materials Science. Sauletekio av. 3, LT-10257 Vilnius, Lithuania.
  Thesis: "Synthesis, characterization and antimicrobial activity of metallic and semiconductor nanoparticles".

2013-2015

- Chemistry of Nanomaterials Master degree studies at Vilnius University, Universiteto st. 3, LT-01513 Vilnius, Lithuania.
  Thesis: " Fabrication by AC Deposition and Antimicrobial Properties of Pyramidal-Shaped Cu_2O-TiO_2 Heterostructures"

2009-2013

- Bioengineering Bachelor degree studies at Vilnius Gediminas Technical University. Sauletekio av. 11, LT-10223 Vilnius, Lithuania.
  Thesis: "Study of antimicrobial properties of alumina foils decorated with silver nanowire array "

2005-2009

- Junior physicists school „Photon“, Siauliai University, Vilniaus st. 141, LT-76353, Siauliai

1996-2009

- Siauliai University gymnasium. Dainu st. 33, LT-78236 Siauliai, Lithuania

Work experience

2023.05-current	➢ Company: Center for Physical Sciences and Technology, Institute of Chemistry, Department of Nanomaterials and materials science. Position: **Senior researcher**
2022.12-current	➢ Company: Institute of Biochemistry, Life Sciences Center, Vilnius University. Position: **Research associate**
2022.10-2023.04	➢ Company: Institute of Biochemistry, Life Sciences Center, Vilnius University. Position: **Senior research associate**
2020.03-2023.04	➢ Company: Center for Physical Sciences and Technology, Institute of Chemistry, Department of Nanomaterials and materials science. Position: **Researcher**
2017.10-2020.03	➢ Company: Center for Physical Sciences and Technology, Institute of Chemistry, Department of Nanomaterials and materials science. Position: **Junior researcher**
2017.09-2020.09	➢ Company: Vilnius Gediminas technical university, Faculty of Fundamentals sciences, Department of Chemistry and Bioengineering Position: **Lecturer**
2013.09-2017.09	➢ Company: Center for Physical Sciences and Technology, Institute of Chemistry, Department of Nanomaterials and materials science. Position: **Engineer**
2012.03-2013.08	➢ Company: Center for Physical Sciences and Technology, Institute of Chemistry, Department of Nanomaterials and materials science. Position: **Technician**

Managed projects:

2025.01-current	Postdoctoral Fellowship funded by the Research Council of Lithuania under the No. P-PD-24-155. Project budget: **120 000** Eur. Supervisor – dr. Marius Dagys
2024.07-current	R&D Idea Verification funded by Economic Recovery and Resilience Plan "New Generation Lithuania" under the No. 10-038-T-0087. Project budget: **29 873.30** Eur.

2024.07-2024.08	Student Summer Internship funded by Research Council of Lithuania under the No. P-SV-24-196. Project budget: **4 000** Eur. Student: Evelina Lukaitė
2022.12-2024.11	Postdoctoral Fellowship funded by the Research Council of Lithuania under the No. P-PD-22-079. Project budget: **90 000** Eur. Supervisor – dr. Marius Dagys
2020.09-2022.08	Development of scientific competencies of scientists, other researchers and students through practical research activities, Postdoctoral fellowship funded by the European Social Fund under the No 09.3.3-LMT-K-712-19-0155. Project budget: **85 008.28** Eur. Supervisor – prof. habil. dr. Arūnas Ramanavičius
2019.09-2019.09	Doctoral scholarship funded by the Research Council of Lithuania under the No. P-DAK-19-191. Project budget: **1140.00** Eur. Participation in international conference "3rd Global Summit on Nanotechnology, Nanomedicine & Materials Science" Barcelona, Spain
2018.09-2019.02	Support for part-time doctoral studies from the Lithuanian national agency Education Exchanges Support Foundation under the No. DD-2018-LT-1594. Project budget: **4956.60** Eur. Location: Malmö University, Biofilms research centre for biointerfaces, Sweden.
2018.09-2018.10	Development of Competences of Scientists, other Researchers and Students through Practical Research Activities, European Social Fund under the No. 09.3.3-LMT-K-712-07-0075. Project budget: **5433.35** Eur.
2018.09-2018.09	Enhancing researcher's international competences "TYKU II" funded by the Agency for Science, Innovation and Technology under the No. TYKU2-01-066. Project budget: **1292.83** Eur.
2018.05-2018.06	Doctoral scholarship funded by the Research Council of Lithuania under the No. P-DAK-18-62. Project budget: **1139.99** Eur. Scientific internship at the Malmö University, Malmö, Sweden
2018.04-2018.04	Development of Competences of Scientists, other Researchers and Students through Practical Research Activities, European Social Fund under the No. 09.3.3.-LMT-K-712-06-0158. Project budget: **3080.85** Eur.
2017.04-2017.05	Doctoral scholarship funded by the Research Council of Lithuania under the No. P-DOC-17095. Project budget: **1140.00** Eur. Scientific internship at the Malmö University, Malmö, Sweden

Projects participated in:

2022.10-2023.04 Development of biosensor research and engineering competence and technology transfer centre (BIOSENSE) No. 01.2.2-CPVA-K-703-03-0010. Project funded by European Regional Development Fund according to the supported activity „Research Projects Implemented by World-class Researcher Groups". Project budget: **997 000** Eur. Project leader: dr. Marius Dagys

2014.07-2014.09 Additional practice during the master studies No VP1-2.2-ŠMM09-V-01-005, Synthesis and characterization of copper oxide. This project was supported by European Union and Republic of Lithuania.
Supervisors: dr. Artūras Žalga and dr. Arūnas Jagminas

2013.09-2013.12 Promotion of Student's Scientific Activities. Study of antimicrobial properties of alumina foils decorated with silver nanowire array. Funded by Research Council of Lithuania.
Supervisor: dr. Arūnas Jagminas

Technical skills and competences

Zahner zennium electrochemical workstation for CV, SIM, EIS, CE, POL, PVI measurement and data analysis; Rigaku smartlab X-ray diffraction measurement and data analysis;
AFM, TEM, SEM, EDX, XPS, FTIR, MS, RAMAN data analysis;

Personal characteristics

Attentive, fast learning, hardworking, careful, determined, patient, flexible, communicative, successful in dealing with people, not afraid of taking challenges.

Languages

	Understanding	Speaking	Writing
Russian	A1	A1	A1
English	B2	B2	B2
German	B1	B1	B1

Leadership skills

Bachelor and master students:
Kotryna Semėnaitė, Bioengineering, VGTU (defended in 2018)
Laura Kalvaitytė, Bioengineering, VGTU (defended in 2019)
Arminas Mikūta, Bioengineering, VGTU (defended in 2019)
Vilius Benedikas, Bioengineering, VGTU (defended in 2020)
Timur Šakurov, Chemistry, VU (defended in 2021)
Kamilė Gedvilaitė, Bioengineering, VilniusTech (defended in 2023)
Yasmine Rezk, Nanobiotechnology, VilniusTech (expected in 2025)
Evelina Lukaitė, Molecular biotechnology, VU (expected in 2025)

Trainings	➢ Development of Competences Skills, 2016 ➢ Enhancing the practical skills and competence for preparing the international MTEPI project and their coordination and management, 2018 ➢ Elsevier seminar: how to choose a good journal wisely? 2018 ➢ Value proposition. What is it and how to create it? 2018
Science Dissemination	During the conference of high school students "Look at the nature 2016" the lecture about MoS_2 nanomaterial and their application for water splitting was given for the student of Siauliai university gymnasium
Reviewer experiance	51st International Physics Olympiad IPhO Lithuania 2021; Responsibility: Marker Bachelor's and master's students from Vilnius University, Faculty of Chemistry and Geosciences final thesis reviewer. Activity: 2020-present Member of scientific expert committee of the best Master Thesis competition in 2018. Bachelor's and master's students from Vilnius Gediminas Technical University final thesis reviewer. Activity: 2017-2020. PhD thesis reviewer: Eivydas Andriukonis (defended in 2022) Eimantas Ramonas (defended in 2023) Reviewer of the journal of *Biosensors & Bioelectronics*, *Colloids and surfaces b: biointerfaces; Journal of Cluster Science; BMC Complementary Medicine and Therapies; Energies; Biosensors;*
Driving license	B
Awards	
2015	MAGNA CUM LAUDE Master degree
2017	Theodor Grotthuss memorial stipend
2017	The best presentation award in FizTech2017 conference
Annexes	Scientific publications Conference proceedings

SCIENTIFIC PUBLICATIONS

1. **Žalnėravičius R.**, Paškevičius A., Kovger J., Jagminas A. Fabrication by AC Deposition and Antimicrobial Properties of Pyramidal-Shaped Cu_2O-TiO_2 Heterostructures. *Nanomaterials and Nanotechnology*, 2014, DOI: 10.5772/59997 (**Q3**, **IF** = 1,6).
2. Jagminas A., **Žalnėravičius R.**, Paškevičius A., Rėza A., Selskienė A. Design, optical and antimicrobial properties of extremely thin alumina films colored with silver nanospecies. *Dalton Transactions*, 2015, 44, 4512-4519, DOI: 10.1039/c4dt03644a (**Q1**, **IF** = 4,052).
3. Jagminas A., Naujokaitis A., **Žalnėravičius R.**, Jasulaitiene V., Valušis G. Tuning the Activity of Nanoplatelet MoS_2-Based Catalyst for Efficient Hydrogen Evolution via Electrochemical Decoration with Pt Nanoparticles. *Applied Surface Science*, 2016, 385, 56-62, DOI: 10.1016/j.apsusc.2016.05.094 (**Q1**, **IF** = 5,155).
4. **Žalnėravičius R.**, Paškevičius A., Kurtinaitienė M., Jagminas A. Size-dependent antimicrobial properties of the cobalt ferrite nanoparticles. *Journal of Nanoparticle Research*, 2016, 18, 300, DOI: 10.1007/s11051-016-3612-x (**Q2**, **IF** = 2,009).
5. Jagminas A., Niaura G., **Žalnėravičius R.**, Trusovas R., Račiukaitis G., Jasulaitienė V. Laser Light Induced Transformation of Molybdenum Disulphide-Based Nanoplatelet Arrays. *Scientific reports*, 2016, 6, 37514. DOI: 10.1038/srep37514 (**Q1**, **IF** = 4,122).
6. Naujokaitis A., **Žalnėravičius R.**, Pakštas V., Arlauskas K., Jagminas A. MoS_2 Nanoplatelet Arrays as a Support for Decoration with Pt Nanoparticles and its Effect on Electrochemical Water Splitting. *Journal of nanomaterials & Molecular nanotechnology*, 2017, 6, 1. DOI: 10.4172/2324-8777.1000208 (**Q** has not yet achieved, **IF** = 3,761).
7. **Žalnėravičius R.**, Paškevičius A., Mažeika K., Jagminas A. Fe(II)-substituted cobalt ferrite nanoparticles against multidrug resistant microorganisms. *Applied Surface Science*, 2018, 435, 141-148 DOI: 10.1016/j.apsusc.2017.11.028 (**Q1**, **IF** = 5,155).
8. Ramanavičius S., **Žalnėravičius R.**, Drabavičius A., Jagminas A. Shell-Dependent Antimicrobial Efficiency of Cobalt Ferrite Nanoparticles. *Nano-Structures & Nano-Objects*, 2018, 15, 40-47. DOI: 10.1016/j.nanoso.2018.03.007 (**Q2**, **IF** = has not yet an impact factor).
9. **Žalnėravičius R.**, Gedminas A., Ruzgas T., Jagminas A. Nanoplatelet MoS_2 arrays decorated with Pt nanoparticles for nonenzymatic detection of hydrogen peroxide. *Journal of electroanalytical chemistry*, 2019, 839, 274-282. DOI: 10.1016/j.jelechem.2019.03.032 (**Q1**, **IF** = 3,218).
10. **Žalnėravičius R.**, Mikalauskaite A., Niaura G., Paškevičius A., Jagminas A. Ultra-small methionine-capped Au^0/Au^+ nanoparticles as efficient drug against the antibiotic-resistant bacteria, *Materials Science and Engineering C-Materials for Biological Applications*, 2019, 102, 646-652. DOI: 10.1016/j.msec.2019.04.062 (**Q1**, **IF** = 4,959).

11. Bockuviene A., **Žalnėravičius R**., Sereikaite J. Preparation, characterization and stability investigation of lycopene-chitooligosaccharides complexes. *Food Bioscience*, 2021, 40, 100854-100863, https://doi.org/10.1016/j.fbio.2020.100854 (**Q2, IF** = 4.24).
12. **Žalnėravičius R**., Klimas V., Paškevičius A., Grincienė G., Karpicz R., Jagminas A., Ramanavičius A. Highly efficient antimicrobial agents based on sulfur-enriched, hydrophilic molybdenum disulfide nano/microparticles and coatings functionalized with palladium nanoparticles. *Journal of Colloid and Interface Science*, 2021, 591, 115–128, https://doi.org/10.1016/j.jcis.2021.01.103 (**Q1, IF** = 8.128).
13. Švedienė J., Novickij V., **Žalnėravičius R**., Raudonienė V., Markovskaja S., Novickij J., Paškevičius A. Antimicrobial activity of l-lysine and poly-l-lysine in combination with pulsed electric fields, *Applied. Sciences*, 2021, 11, 2708-2720, https://doi.org/10.3390/app11062708 (**Q2**, **IF** = 2.679).
14. **Žalnėravičius R**., Paškevičius A., Samukaitė-Bubnienė U., Ramanavičius S., Vilkienė M., Mockevičienė I., Ramanavičius A. Microbial fuel cell based on nitrogen-fixing *Rhizobium anhuiense* bacteria. *Biosensors*, 2022, 12, 113-128, https://doi.org/10.3390/bios12020113 (**Q1, IF** = 5.743).
15. Shafaat A., **Žalnėravičius R**., Ratautas D., Dagys M., Meškys R., Rutkienė R., Gonzalez-Martinez J.F., Neilands J., Björklund S., Stores J., Ruzgas T. Glucose-to-resistor transduction integrated into a radio-frequency antenna for chip-less and battery-less wireless sensing, ACS Sensors, 2022, 7, 4, 1222–1234, https://doi.org/10.1021/acssensors.2c00394 (**Q1, IF** = 9.618).
16. **Žalnėravičius R**., Ramanavičius A. Enhancement of Glucose Oxidase-Based Bioanode Performance by Comprising *Spirulina platensis* Microalgae Lysate, *Journal of The Electrochemical Society*, 2022 169 053510, https://doi.org/10.1149/1945-7111/ac7080 (**Q2, IF** = 4.386).
17. **Žalnėravičius R**., Klimas V., Naujokaitis A., Jagminas A., Ramanavičius A. Development of biofuel cell based on anode modified by glucose oxidase, *Spirulina platensis*-based lysate and multi-walled carbon nanotubes, *Electrochimica acta*, 2022, 426, 140689, https://doi.org/10.1016/j.electacta.2022.140689 (**Q1, IF** = 7.336).
18. Reinikovaite, V., Zukauskas, S., **Žalnėravičius, R.,** Ratautaite, V., Ramanavicius, S., Bucinskas, V., Vilkiene, M., Ramanavicius, A., Samukaite-Bubniene, U. Assessment of *Rhizobium anhuiense* bacteria as a potential biocatalyst for microbial biofuel cell design, *Biosensors,* 2023, 13, 66 https://doi.org/10.3390/bios13010066 (**Q1, IF** = 5.743)
19. **Žalnėravičius R**., Pakštas V., Grincienė G., Klimas V., Paškevičius A., Timmo K., Kauk-Kuusik M., Franckevičius M., Niaura G., Talaikis M., Jagminas A., Ramanavičius A. Antimicrobial particles based on Cu_2ZnSnS_4 monograins, *Colloids and surfaces B: Biointerfaces*, 2023, 225, 113275, https://doi.org/10.1016/j.colsurfb.2023.113275 (**Q1, IF** = 5.999)
20. Radzevičiūtė-Valčiukė E., Gečaitė J., Želvys A., Zinkevičienė A., **Žalnėravičius R**., Malyško-Ptašinskė V., Nemeikaitė-Čenienė A., Kašėta V., German N., Novickij J., Ramanavičienė A., Kulbacka J., Novickij V. Improving nonviral gene delivery using MHz bursts of nanosecond pulses and gold nanoparticles for

electric field amplification, *Pharmaceutics*, 2023, 15, 1178, https://doi.org/10.3390/pharmaceutics15041178 (**Q1, IF** = 6.525)

21. **Žalnėravičius R**., Naujokaitis A., Jasulaitienė V., Rutkienė R., Meškys R., Dagys M. A 2D-to-3D morphology transitions of gold in organic acid electrolytes: Characterization and application in bioanode design, *Applied Surface Science*, 2024, 642, 158654, https://doi.org/10.1016/j.apsusc.2023.158654 (**Q1, IF** = 6.7).
22. Thirabowonkitphithan P., **Žalnėravičius R**., Shafaat A., Jakubauskas D., Neilands J., Laiwattanapaisal W., Ruzgas T. Electrogenicity of microbial biofilms of medically relevant microorganisms: potentiometric, amperometric and wireless detection, *Biosensors and Bioelectronics*, 2024, 264, 115892, https://doi.org/10.1016/j.bios.2023.115892 (**Q1, IF** = 12.6)
23. Tchekwagep P.M.S., **Žalnėravičius R**., Nanseu-Njiki C.P., Ngameni E., Arnebrant T., Ruzgas T., Electrochemical insights into layered assemblies of silver nanoparticles, poly-l-lysine, and bovine serum albumin, *Electroanalysis,* 2024, e202400031, https://doi.org/10.1002/elan.202400031 (**Q2, IF** = 3)
24. **Žalnėravičius R**., Talaikis M., Klimas V., Serapinas S., Butkevičius M., Vaičiūnienė J., Morkvėnas A., Karabanovas V., Niaura G., Jagminas A., Dagys M. Fabrication of porous black gold films by one-step anodic treatment: towards the development of SERS-active nanosensors, Submitted to the Chemical Engineering Journal 2025. Current status: with Editor.

Conferences proceedings

1. **Žalnėravičius R**., Bružaitė I., Paškevičius A., Jagminas A. *Bacterial activity of extremely thin porous alumina films gold-colored by silver nanowire arrays.* Chemistry and technology of inorganic materials, Kaunas, Lithuania, 2013, 98-103, (PP).
2. **Žalnėravičius R**., Paškevičius A., Jagminas A. *Fabrication and antimicrobial properties of Cu_2O-TiO_2 heterostructures*. FizTech2014, Vilnius, Lithuania, 2014, (OP).
3. **Žalnėravičius R**., Jagminas A. *Anodically oxidation of Ti surfaces and decoration the obtained surfaces with Cu_2O nanoparticles for antimicrobial coatings*. Chemistry and chemical technology, Klaipeda, Lithuania, 2015, 157-161, (OP).
4. **Žalnėravičius R**., Naujokaitis A., Jagminas A. *Nanoplatelet MoS_2 films decorated with Pt quantum dots for effective hydrogen production*. Chemistry and chemical technology. Vilnius, Lithuania, 2016, (PP).
5. **Žalnėravičius R**., Jagminas A. *Size-dependent antimicrobial properties of the cobalt ferrite nanoparticles*. 18th International conference, Advanced Materials and Technologies, Palanga, Lithuania, 2016, 51, (PP).

6. **Žalnėravičius R**., Jagminas A. *Synthesis and antimicrobial activity of $CoFe_2O_4$ nanoparticles*. FizTech2016, Vilnius, Lithuania, 2016, (OP).

7. **Žalnėravičius R**., Naujokaitis A., Jagminas A. and Homs N. *Ultra-highly efficient MoS_2/Pt nanoplatelet arrays on Ti substrate for electrocatalytic hydrogen evoliution reaction*. 9th International Nanoconference, Advances in Bioelectrochemistry and Nanomaterials, Vilnius, Lithuania, 2016, 43-45, (PP).

8. **Žalnėravičius R**., Jagminas A. *L-lysine coated Fe-doped magnetic nanoparticles are promising material for multidrug resistant microorganisms threat*. 19th International conference, Advanced Materials and Technologies, Palanga, Lithuania, 2017, 56, (PP).

9. Naujokaitis A., Arlauskas K., **Žalnėravičius R**., Jagminas A. *Electrochemical decoration of MoS_2 nanoplatelet arrays with Pt quantum dots for high efficient water splitting*. 11th International Conference on Advanced materials & Processing, Edinburgh, Scotland, 2017, 91, (PP).

10. **Žalnėravičius R**., Jagminas A. *Synthesis, characterization and antimicrobial activity of superparamagnetic $CoFe_2O_4$ nanoparticles*. FizTech2017, Vilnius, Lithuania, 2017, (OP). **Awarded for the best oral presentation**.

11. **Žalnėravičius R**., Jagminas A., Paškevičius A. *Cobalt ferrite nanoparticles against multi-drug resistant microorganisms*. Biomedical and Life Sciences Meeting Collaborative Conference on Antimicrobial Resistance. Victoria, Canada, 2018, (OP).

12. **Žalnėravičius R**., Jagminas A., Paškevičius A. *Ultra-small nanoparticles as efficient antibiotics*. 23th ISE topical meeting Electrochemistry for Investigation of Biological Objects: from Functional Nanomaterials to Micro/Nano-Electrodes, Vilnius, Lithuania, 2018, (OP).

13. **Žalnėravičius R**., Kurtinaitienė M., Paškevičius A., Jagminas A. *Ultra-small Gold Nanoparticles as a Promising Antimicrobial Agent*. Advanced materials and technologies, Palanga, Lithuania, 2018, (PP).

14. **Žalnėravičius R**., Jagminas A., Kurtinaitienė M., Klimas V., Paškevičius A., *Gold Nanoparticles Against Clinically Isolated Pathogens*, Nano Bio, International conference on nanotechnologies and Bionanoscience, Heraklion, Greece, 2018, (PP).

15. Ruzgas T., Shafaat A., **Žalnėravičius R**., Pham A.D., Gonzalez J.F., Sotres J. *Plugging redox reactions into wireless devices: RFID-based biosensor tag*, XXV International Symposium on Bioelectrochemistry and Bioenergetics, Limerick, Ireland, 2019, 139 (OP).

16. Thirabowonkitphithan P., Laiwattanapaisal W., **Žalnėravičius R**., Shafaat A., Neilands J., Jakubauskas D., Ruzgas T. *Wireless sensing of biofilms of medically relevant bacteria and fungi*. ^{6}th International Conference on Bio-Sensing Technology, Kuala Lumpur, Malaysia, 2019, (OP).

17. **R. Žalnėravičius**, A. Jagminas. *Ultra-small Methionine-Capped Au^{0}/Au^{+} Nanoparticles as efficient drug against most dangerous bacteria*. ^{3}rd Global summit on Nanotechnology, Nanomedicine & Material science, Barcelona, Spain, 2019, (PP).

18. **R. Žalnėravičius**, M. Ragelytė, V. Klimas, G. Grincienė, R. Karpicz, A. Ramanavičius, A. Jagminas, *Antimicrobial properties of sulphur-enriched, hydrophilic MoS_2 nano/microparticles and heterostructured Pd/MoS_2/Ti coatings*, Chemistry&chemical technology, 2021, Vilnius, Lithuania (PP).

19. **R. Žalnėravičius**, M. Dagys, A. Naujokaitis, D. Ratautas, R. Rutkienė, V. Jasulaitienė, R. Meškys, *Nanostructurization of bare gold electrodes for biofuel cell applications: drop-casted nanoparticles vs electrochemically formed surfaces*, 74th ISE Annual Meeting of the International Society of Electrochemistry, Lyon, France, 2023, (PP).

20. Ruzgas T., Thirabowonkitphithan P., **Žalnėravičius R**., Shafaat A., Laiwattanapaisal W. *Electrogenicity of biofilms formed by medically relevant microbes*, XXVIII International Symposium on Bioelectrochemistry and Bioenergetics of the Bioelectrochemical Society, Madrid, Spain, 2024 (OP).

21. **R. Žalnėravičius**, P. Thirabowonkitphithan, A. Shafaat, T. Ruzgas, W. Laiwattanapaisal, J. Neilands, E. Lukaitė, Y. Rezk, M. Dagys, *Potentiometric, amperometric and wireless detection of microbial biofilms,* 75th ISE Annual Meeting of the International Society of Electrochemistry, Montreal, Canada, 2024, (OP).