Curriculum vitae Europass

Personal information	
First name / Surname	Alina ASANDEI
Address	Blvd. Carol I, 11, 700506, Iasi, Romania
Telephone(s)	+(4032) 201 191
Fax(es)	+(4032) 201 205
E-mail	alina.asandei@uaic.ro
Nationality	Română
Date of birth	31.08.1976
Gende	Feminin
Present employment / position	**CS I dr. habil. Department of Exact and Natural Science, Institute of Interdisciplinary Research, Alexandru I. Cuza' University of Iasi,**
Work experience	
Dates	**2007-2013/ 2013-2019/ 2019-2024, May 2023-present habil/June 2024-present**
Occupation or position held	➢ Research Assistant/ Scientific Researcher III / Scientific Researcher II/ Scientific Researcher II habil/Scientific Researcher I
Main activities and responsibilities	➢ Research activity and Research activity with undergraduated, master or PhD students.
Name and address of employer	Alexandru Ioan Cuza University, Institute of Interdisciplinary Research
Education and training	
Dates	**2010-2013**
Title of qualification awarded	➢ Post-doctoral Fellow POSDRU/89/1.5/S/49944 Program
Principal subjects/occupational skills covered	➢ Obtaining and studying stochastic sensors
Name and type of organisation providing education and training	Alexandru Ioan Cuza University, Laboratory of Molecular Biophysics and Medical Physics, Bd. Carol I, No. 11, Iasi, Romania
Dates	**2005-2008**
Title of qualification awarded	➢ **Ph.D. in Physics (magna cum laude)**
Principal subjects/occupational skills covered	➢ Ph. D. thesis title: Single molecule studies of interaction mechanism between the antibiotics and artificial lipid membranes;
Name and type of organisation providing education and training	"Alexandru Ioan Cuza University, Faculty of Physics, Laboratory of Molecular Biophysics and Medical Physics , Bd. Carol I, No. 11, Iasi, Romania
Dates	**2003 – 2005**
Title of qualification awarded	➢ Master degree
Principal subjects/occupational skills covered	➢ Master program of Biophysics and Medical Physics
Name and type of organisation providing education and training	Alexandru Ioan Cuza University, Faculty of Physics, Laboratory of Molecular Biophysics and Medical Physics , Bd. Carol I, No. 11, Iasi, Romania
Dates	**1999-2003**

Title of qualification awarded	➢ Bachelor degree
Principal subjects/occupational skills covered	➢ Bachelor program of Physical Chemistry
Name and type of organisation providing education and training	Alexandru Ioan Cuza' University, Faculty of Chemistry, Bd. Carol I, No. 11, Iasi, Romania
Professional skills and competences	➢ **Areas of research: Molecular and cellular biophysics**
Organisational skills and competences	➢ Good relationship with colleagues, effective communication skills, kindness, responsibility, coordination with the team. Team work and scientific research experience acquired as member in 11 national grants and 1 international grant and as coordinator in 2 national grant.
Computer skills and competences	➢ Good knowledge of LabView, Mathematica, Origin, Adobe (Photoshop, Acrobat), Microsoft (Office)
Teaching activities	➢ Electromagnetic field action on complex systems (M.Sc. students) ➢ Bioelectricity. (M.Sc. students) ➢ Quality esurance in the practice of medical physicists (M.Sc. students) ➢ Biophysics of sensorial systems (M.Sc. students) ➢ Radiobiology (B.Sc. students)
Personal skills and competences	
Mother tongue(s)	**romanian**
Limba(i) străină(e) cunoscută(e)	**English, French**

Self-assessment	**Understanding**		**Speaking**		**Writing**
European level (*)	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C2	C1	C1	C1
French	B2	B2	B2	B1	A2

(*) Common European Framework of Reference for Languages

Scientific research activity	So far, I have been involved in research concerning: ➢ electrophysiology; ➢ biophysics of artificial lipid membranes; ➢ single-channel recording and analysis; ➢ antimicrobial and cell-penetrating peptides; ➢ stochastic sensing ➢ single-molecule investigation of peptides, ssDNA,- nanopores interactions. h-index 17, 666 citations (excluding self-citations); 50 communications presented at international and national conferences; ➢ 2009 EBSA (European Biophysical Societies' Association) Bursary ➢ May 2011 - Participation at Gordon Research Conference on Antimicrobial Peptides, Lucca (Barga) Italy ➢ 2012 Finalist in the L'Oreal - UNESCO national scholarship program < For women in science> ➢ 2015 Woman's Annual Science and Technology ➢ Distinction for young researchers -UAIC STAGES 2016 IUVENTAS SCIENTIAE (UAI
Affiliation	Romanian Society of Pure and Applied BiophysicsIntegrated Platform for Advanced Studies in Molecular Nanotechnologies (AMON)
Appendices	Selection of journal papers, research grant

Appendix to the CV (Alina ASANDEI)

Papers published in peer-reviewed journals:

1. Mereuta, L; Bhatti, H; **Asandei, A;** Cimpanu, A; Ying, YL; Long, YT; Luchian, T Controlling DNA Fragments Translocation across Nanopores with the Synergic Use of Site-Directed Mutagenesis, pH-Dependent Charge Tuning, and Electroosmotic Flow ACS Applied Materials & Interfaces 2024, 16 (30), 40100-40110.
2. Schiopu, I, Dragomir, I, **Asandei, A** Single molecule technique unveils the role of electrostatic interactions in ssDNA-gp32 molecular complex stability, RSC Advances 2024, 14(8), 5449–5460.
3. Mereuta, L; **Asandei, A**; Schiopu, I; Park, J; Park, Y.; Luchian, T Synthetic Receptor Based on a Peptide Antibiotic-Functionalized Chimera for Hybridization-Based Polynucleotide Detection, ACS Applied Materials & Interfaces 2023, 15 (27), 33159-33168.
4. Mereuta, L; **Asandei, A**; Andricioaei, I; Park, J; Park, Y; Luchian, T Considerable slowdown of short DNA fragment translocation across a protein nanopore using pH-induced generation of enthalpic traps inside the permeation pathway, Nanoscale 2023, 15(36), 14754-14763.
5. Bucataru, IC; Dragomir, I; **Asandei, A**; Pantazica, AM; Branza-Nichita, N; Park, Y; Luchian, T. Probing the Hepatitis B Virus E-Antigen with a Nanopore Sensor Based on Collisional Events Analysis, **BIOSENSORS-BASEL 2022,** 12, 596.
6. Mereuta, L; **Asandei, A**; Dragomir, I; Park, J; Park, Y, [5] ; Luchian, T. A Nanopore Sensor for Multiplexed Detection of Short Polynucleotides Based on Length-Variable, Poly-Arginine-Conjugated Peptide Nucleic Acids, **Analytical Chemistry 2022**, 94,.8774-8782.
7. **Asandei, A**; Mereuta, L; Bucataru, IC; Park, Y; Luchian, T. A Single-Molecule Insight into the Ionic Strength-dependent, Cationic Peptide Nucleic Acids-Oligonucleotides Interactions, **CHEMISTRY-AN ASIAN JOURNAL**, **2022,** 17, e202200261.
8. **Asandei A,** Mereuta L, Schiopu I, Park Y, Luchian T Teaching an old dog new tricks: a lipid membrane-based electric immunosensor for real-time probing of the spike S1 protein subunit from SARS-CoV-2, **Proteomics 2021,** e2100047.
9. Luchian, T.; Mereuta, L.; Park, Y.; **Asandei, A**.; Schiopu, I. Single-molecule, hybridization-based strategies for short nucleic acids detection and recognition with nanopores, **Proteomics 2021**, e2100046.
10. Dragomir, I.S., **Asandei, A**., Schiopu, I, Bucataru, I.C., Mereuta, L., Luchian, T. The Nanopore-Tweezing-Based, Targeted Detection of Nucleobases on Short Functionalized Peptide Nucleic Acid Sequences, **Polymers 2021**, 13 (8), 1210.
11. Schiopu Irina, **Asandei Alina**, Mereuta Loredana, Dragomir Isabela, Bucataru Ioana Cezara, Luchian Tudor.Single-molecule detection and manipulation with biological nanopores. **Studia Universitatis Babes-Bolyai, Chemia 2021,** 66 161-174.
12. **Asandei, A**.; Mereuta, L.; Schiopu, I.; Park, J.; Seo, C-H.; Park, Y.; Luchian, T. Non-Receptor-Mediated Lipid Membrane Permeabilization by the SARS-CoV-2 Spike Protein S1 Subunit, **ACS APPLIED MATERIALS & INTERFACES 2020**, 12(50), 55649-55658.
13. Loredana Mereuta, **Alina Asandei**, Isabela S. Dragomir, Ioana C. Bucataru, Jonggwan Park, Chang Ho Seo, Yoonkyung Park, Tudor Luchian, Sequence-specific detection of single-stranded DNA with a gold nanoparticle-protein nanopore approach **Scientific Reports, 2020** 10 (1).
14. Ko, Su Jin; Park, Eunji; **Asandei, Alina**; Choi, Jee-Young; Lee, Seung-Chul; Seo, Chang Ho; Luchian, Tudor; Park, Yoonkyung, Bee venom-derived antimicrobial peptide melectin has broad-spectrum potency, cell selectivity, and salt-resistant properties **SCIENTIFIC REPORTS 2020,** 10(1).
15. **Asandei, Alina;** Di Muccio, Giovanni; Schiopu, Irina; Mereuta, Loredana; Dragomir, Isabela S.; Chinappi, Mauro; Luchian, Tudor, Nanopore-Based Protein Sequencing Using Biopores: Current Achievements and Open Challenges**, SMALL METHODS 2020,** 4 (11).

16. Loredana Mereuta, **Alina Asandei**, Irina Schiopu, Yoonkyung Park, Tudor Luchian, Nanopore-Assisted, Sequence-Specific Detection and Single-Molecule Hybridization Analysis of Short, Single-Stranded DNAs, **Analytical Chemistry, 2019,** 91, 8630-8637.
17. Alina Asandei, Loredana Mereuta, Jonggwan Park, Chang Ho Seo, Yoonkyung Park, Tudor Luchian, Non-Functionalized PNAs as Beacons for Nucleic Acids Detection in a Nanopore System, **ACS Sensors 2019**, 4, 1502-1507.
18. Luchian, T, Park Y, **Asandei A,** Schiopu I, Mereuta L, Apetrei A, Nanoscale Probing of Informational Polymers with Nanopores. Applications to Amyloidogenic Fragments, Peptides, and DNA-PNA Hybrids. **ACCOUNTS OF CHEMICAL RESEARCH 2019**, 52, 267-276.
19. **Alina Asandei,** Dragomir Isabela S., Di Muccio Giovanni, Chinappi Mauro, Park Yoonkyung, Luchian Tudor. Single-Molecule Dynamics and Discrimination between Hydrophilic and Hydrophobic Amino Acids in Peptides, through Controllable, Stepwise Translocation across Nanopores. **Polymers 2018**, 10, 885.
20. Ciuca Andrei, **Asandei Alina**, Schiopu Irina, Apetrei Aurelia, Mereuta Loredana, Seo Chang Ho, Park Yoonkyung, Luchian Tudor. Single Molecule, Real-Time Dissecting of Peptide Nucleic Acids-DNA Duplexes with a Protein Nanopore Tweezer. **Anal. Chem., 2018**, 90, 7682–7690.
21. **Alina Asandei,** Schiopu Irina, Ciobanasu Corina, Park Yoonkyung, Luchian Tudor. If Squeezed, a Camel Passes Through the Eye of a Needle: Voltage-Mediated Stretching of Dendrimers Facilitates Passage Through a Nanopore. **J. Membr. Biol. 2018**, 251, 405-417.
22. **Alina Asandei,** Aldo E Rossini, Mauro Chinappi, Yoonkyung Park, Tudor Luchian. Protein Nanopore-Based Discrimination Between Selected Neutral Amino Acids from Polypeptides. **Langmuir 2017**, 33, 14451–14459.
23. **Alina Asandei**, Andrei Ciuca, Aurelia Apetrei, Irina Schiopu, Loredana Mereuta, Chang Ho Seo, Yoonkyung Park, Tudor Luchian, Nanoscale Investigation of Generation 1 PAMAM Dendrimers Interaction with a Protein Nanopore. **Scientific Reports 2017**, 7.
24. **Alina Asandei**, Irina Schiopu, Mauro Chinappi, Chang Ho Seo, Yoonkyung Park, Tudor Luchian. Electroosmotic Trap Against the Electrophoretic Force Near a Protein Nanopore Reveals Peptide Dynamics During Capture and Translocation. **Applied Materials & Interfaces 2016**, 8 (20), 13166-13179.
25. **Alina Asandei**, Mauro Chinappi, Hee-Kyoung Kang, Chang Ho Seo, Loredana Mereuta, Yoonkyung Park, Tudor Luchian, Acidity-Mediated, Electrostatic Tuning of Asymmetrically Charged Peptides Interactions with Protein Nanopores. **ACS Applied Materials & Interfaces 2015**, 7 (30), 16706-16714.
26. **Alina Asandei**, Mauro Chinappi, Jong-kook Lee, Chang Ho Seo, Loredana Mereuta, Yoonkyung Park, Tudor Luchian, Placement of oppositely charged aminoacids at a polypeptide termini determines the voltage controlled braking of polymer transport through nanometer-scale pores. **Scientific Reports 2015**, 5 (10419).
27. Loredana Mereuta, **Alina Asandei**, Chang Ho Seo, Yoonkyung Park, Tudor Luchian, Quantitative Understanding of pH- and Salt-Mediated Conformational Folding of Histidine-Containing, beta-Hairpin-like Peptides, through Single-Molecule Probing with Protein Nanopores. **ACS Applied Materials & Interfaces 2014**, 6, (15), 13242-13256.
28. **Alina Asandei**, Sorana Iftemi, Loredana Mereuta, Irina Schiopu, Tudor Luchian, Probing of Various Physiologically Relevant Metals: Amyloid-beta Peptide Interactions with a Lipid Membrane-Immobilized Protein Nanopore, **Journal of Membrane Biology 2014**, 247(6), 523-553.
29. Loredana Mereuta, Mahua Roy, **Alina Asandei**, Jong Kook Lee, Yoonkyung Park, Ioan Andricioaei, Tudor Luchian, Slowing down single-molecule trafficking through a protein nanopore reveals intermediates for peptide translocation, **Scientific Reports 2014**, 4 (3885).
30. **Alina Asandei**, Irina Schiopu, Sorana Iftemi, Loredana Mereuta, Tudor Luchian, Investigation of Cu2+ Binding to Human and Rat Amyloid Fragments A beta (1-16) with a Protein Nanopore, **Langmuir 2013**, 29, (50), 15634-15642.

31. Loredana Mereuta, Irina Schiopu, **Alina Asandei**, Yoonkyung Park, Kyung-Soo Hahm, Tudor Luchian, Protein Nanopore-Based, Single-Molecule Exploration of Copper Binding to an Antimicrobial-Derived, Histidine-Containing Chimera Peptide, **Langmuir 2012**, 28, (49), 17079-17091.

32. Elisa Campos, **Alina Asandei**, Colin E. McVey, Joao C. Dias, A. Sofia F. Oliveira, Claudio M. Soares, Tudor Luchian, Yann Astier, The Role of Lys147 in the Interaction between MPSA-Gold Nanoparticles and the alpha-Hemolysin Nanopore, **Langmuir 2012**, 28, (44), 15643-15650.

33. Loredana Mereuta, **Alina Asandei**, Tudor Luchian, Meet Me on the Other Side: Trans-Bilayer Modulation of a Model Voltage-Gated Ion Channel Activity by Membrane Electrostatics Asymmetry, **PLOS ONE 2011**, 6 (9) e25276.

34. **Alina Asandei**, Loredana Mereuta, Tudor Luchian, The Kinetics of Ampicillin Complexation by gamma-Cyclodextrins. A Single Molecule Approach, **Journal of Physical Chemistry B 2011**, 115 (33), 10173-10181.

35. **Alina Asandei**, Aurelia Apetrei, Tudor Luchian, Uni-molecular detection and quantification of selected beta-lactam antibiotics with a hybrid alpha-hemolysin protein pore, **Journal of Molecular Recognition 2011,** 24, 199-207.

36. **Alina Asandei**, Aurelia Apetrei, Yoonkyung Park, Kyung-Soo Hahm, Tudor Luchian, Investigation of Single-Molecule Kinetics Mediated by Weak Hydrogen-Bonds Within a Biological Nanopore, **Langmuir 2011**, 27, 19-24.

37. Apetrei Aurelia, **Asandei Alina**, Park Yoonkyung, Hahm Kyung-Soo, Winterhalter Mathias, Luchian Tudor Unimolecular study of the interaction between the outer membrane protein OmpF from E. coli and an analogue of the HP (2-20) antimicrobial peptide, **Journal of Bioenergetics and Biomembranes 2010**, 42, 173-180.

38. **Alina Asandei**, Tudor Luchian, Ion selectivity, transport properties and dynamics of amphotericin B channels studied over a wide range of acidity changes, **Colloids and Surfaces B: Biointerfaces 2008**, 67, 99–106.

39. **Alina Asandei**; Loredana Mereuta; Tudor Luchian, Influence of membrane potentials upon reversible protonation of acidic residues from the OmpF eyelet. **Biophysical Chemistry 2008**, 135, 32-40.

RESEARCH GRANTS

1. 2020 – 2022 „Nanopore-based, ultra-sensitive and multivalent detection of short nucleic acid fragments, with functionalized gold nanoparticles", (NANOSENSEDNA), PN-III-P1-1.1-TE-2019-0037, nr. 18/2020.
2. 2021 – 2023 „Xeno nucleic acids-mediated, real-time multiplexed detection of disease relevant miRNAs, with single molecule sensitivity and selectivity" RNANANODETECT, PN-III-P4-ID-PCE-2020-0011
3. 2020 - 2022 „Label-free, real-time detection platform of Hepatitis B Virus antigens with protein biosensors" HEPATVIRDETECT, PN-IIIP2-2.1-PED-2019-0016.
4. 2018-2020 PN-III-P1-1.1-TE-2016-0508 Nanopore-based, pattern recognition on the primary structure of polypeptides at uni-molecular level
5. 2018 - 2020 N-III-P1-1.2-PCCDI-2017-0010 'Emerging molecular technologies based on micro and nano-structured systems with biomedical applications
6. 2017 - 2019 PN-III-P4-ID-PCE-2016-0026 A nanopore tweezer-based approach for studying intermolecular interactions at uni-molecular level. application to exploring metal-mediated, mismatched base pairs hybridization in nucleic acids

7. 2014 – 2019 ‘Design and Development of Therapeutic AMPs against Epidemic Superbugs’. nr. 830/21.01.2015 (Romania-Korea collaboration), National Research Foundation of Korea
8. 2012 - 2016 “Homogenous immunoassay technique based on functionalized nanoparticles. Application to detection of pesticide contaminant 2,4-dichlorophenoxyacetic acid from alimentary and environmental samples” (HINANODET), PN II PCCA1 nr. 98/2012
9. 2012-2015 ‘Rational design and generation of synthetic, short antimicrobial peptides. Linking structure to function’ (BIOPEP), PN II PCCA tip1 nr.123/2012
10. 2012-2015 ‘Ion sensing and separation through modified cyclic peptides, cyclodextrins and protein pores/ Detecţia şi separarea ionică prin intermediul peptidelor ciclice, al ciclodextrinelor şi al porilor proteici’ (BIOSENS) PN II IDEI PCCE nr.1/2012
11. 2008-2011 “Elucidation of mechanisms of interaction of selected cytotoxic peptides with tumor cells, and optimization of anti-tumoral properties of such peptides”, PN II nr. 62061/2008
12. 2007-2010 ‘Molecular characterization of antimicrobial peptides action mechanisms and de-novo prediction of molecular structures with enhanced antimicrobial potential’ PN II nr.61-016/2007
13. 2006-2008 ‘Nano-scale approach towards studying couplings between biomembranes, bacterial toxins and proteins with roles in drugs penetration’ 2-Cex 06-11-49 / 2006
14. 2006-2008 ‘Study of impermeability-mediated antimicrobial resistance mechanisms of Gram-negative bacteria in natural and reconstituted membranes’ CEEX nr.168/2006

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