



## Europass Curriculum Vitae

### Personal information

First name(s) / Surname(s) **Alina ASANDEI**  
Address(es) Blvd. Carol I, 11, 700506, Iasi, Romania  
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Fax(es) +(4032) 201 205  
E-mail **alina.asandei@uaic.ro**  
Nationality romanian  
Date of birth A s 31, 197  
Gender Female

### Present employment / position

Senior Scientist II D abilit at 'Alexandru I. Cuza' University of Iasi,  
Institute of Molecular Biophysics

### Work experience

Dates 2007 – 2013 / 2013 – 201 / 201 -  
Occupation or position held esea Assis an / S ien i i esea e III / S ien i i esea e II at Ins i e In e dis i lina esea  
Main activities and responsibilities esea a i i with undergraduated, master or PhD students  
Name and address of employer Alexandru Ioan Cuza University, I I, Bd. Carol I, No. 11, Iasi, Romania

### Education and training

Dates 2010-2013  
Title of qualification awarded Post-doctoral Fellow SD S a  
Principal subjects/occupational skills covered b ainin and s d in s asi sens s  
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 ( a na 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 si al e is  
Name and type of organisation providing education and training "Alexandru Ioan Cuza' University, Faculty of Chemistry,, Bd. Carol I, No. 11, Iasi, Romania

**Personal skills and competences**

Mother tongue(s) romanian

Self-assessment

European level (\*)

English

Understanding		Speaking		Writing	
Listening	Reading	Spoken interaction	Spoken production		
C2	C2	C1	C1	C1	

(\*) [Common European Framework of Reference for Languages](#)

**Professional skills and competences**

Areas of research: Molecular and cellular biophysics.

**Organisational skills and competences**

delains i i llea es, e e i e ni a i n s ills, indness, es nsibili , dina i n i e ea 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), i s i e

**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)

**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, 663 citations (excluding self-citations);**

**50 communications presented at international and national conferences;**

200 EBSA (European Biophysical Societies' Association) Bursary

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 20 a n s A n n a l S i e n e a n d e n l D i s i n i n n e s e a e s A l S A E S  
 20 I E N A S S I E N I A E A I

**Affiliation**

Romanian Society of Pure and Applied Biophysics

In e a e d l a A d a n e d S d i e s i n l e l a N a n e n l i e s A N

Workshops)

**Appendices**

Selection of journal papers, research grant

## Appendix to the CV (Alina ASANDEI)

### Papers published in peer-reviewed journals:

1. 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.
2. 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.
3. **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.
4. **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.
5. 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.
6. 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.
7. Schiopu Irina, **Asandei Alina**, Mereuta Loredana, Dragomir Isabela, Bucataru Ioana Cezara, Luchian Tudor. Single-molecule detection and manipulation with biological nanopores. **Studia Universitatis Babeş-Bolyai, Chemia** **2021**, 66 161-174.
8. **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.
9. Loredana Mereuta<sup>#</sup>, **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).
10. 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).
11. **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).
12. 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.
13. 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.
14. 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.
15. **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.

16. 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.
17. **Alina Asandei**, Schiopu Irina, Ciobanasi 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.
18. **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.
19. **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.
20. **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.
21. **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.
22. **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).
23. 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.
24. **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.
25. 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).
26. **Alina Asandei**, Irina Schiopu, Sorana Iftemi, Loredana Mereuta, Tudor Luchian, Investigation of Cu<sup>2+</sup> Binding to Human and Rat Amyloid Fragments A beta (1-16) with a Protein Nanopore, **Langmuir** 2013, 29, (50), 15634-15642.
27. 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.
28. 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.
29. 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.
30. **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.

31. **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.
32. **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.
33. 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.
34. **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.
35. **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/ Detectia și separarea ionică prin intermediul peptidelor ciclice, al ciclodextrinelor și 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