PERSONAL INFORMATION

Violeta Iancu

30 Reactorului Street, Magurele, 077125, Romania

violeta.iancu@eli-np.ro

Sex Female | Nationality Romanian

WORK EXPERIENCE

2021 - present — Research scientist II

Deputy head of Gamma Driven Experiments Department since January 2023.

Extreme Light Infrastructure – Nuclear Physics (ELI-NP), Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering, 30 Reactorului St, POBox MG-6, Bucharest-Magurele, 077125, Romania

Coordinates research in non-destructive industrial and security applications with gamma beams related to ELI-NP. Coordinates the implementation of setups for the medical radioisotope production with gamma beams.

2014 - 2021 — Research scientist III

Extreme Light Infrastructure – Nuclear Physics (ELI-NP), Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering, 30 Reactorului St, POBox MG-6, Bucharest-Magurele, 077125, Romania

Coordinated the implementation of experimental setups for the gamma beam industrial applications at ELI-NP. Managed the implementation of two instruments that will be used for gamma beam diagnostics. Mentored student during PhD studies. Proposed and managed a research grant.

2009 - 2013 — Postdoctoral Fellow

KU Leuven, Laboratorium voor Vaste - Stoffysica en Magnetisme, Celestijnenlaan 200D

B-3001 Leuven, Belgium

Implemented and used organic molecular beam epitaxy in combination with molecular beam epitaxy for the growth of low-dimensional nano-materials. Performed Scanning Probe Microscopy (STM) in different environments. Proposed and managed a research grant. Mentored students and managed collaborations within KU Leuven as well as with external research teams, e.g. Vrije Universiteit Brussel

2007- 2009 — Postdoctoral research associate

The University of Tennessee, Department of Physics and Astronomy, Knoxville, Tennessee, TN 37996, USA

Managed the fabrication of ultrathin silicide nanowires in ultrahigh vacuum on different substrates. Supervised the operation and serviced an ultrahigh vacuum system that includes an STM and various atom sources. Collaborated with the Center of Nanophase Materials Sciences at Oak Ridge National Laboratory for 4-probe STM transport measurements on YSi2 nanowires.

2001 - 2006 — Research assistant

Ohio University, Department of Physics and Astronomy, Athens, Ohio, OH 45701, USA

Participated in the construction of a low temperature scanning tunneling microscope capable of single atom and molecule manipulations. Conducted low-temperature experiments on single molecules and their self-assembly. Investigated the Kondo effect in molecular systems

2000 - 2001 — Teaching assistant

Ohio University, Department of Physics and Astronomy, Athens, Ohio, OH 45701, USA

Led laboratory classes for undergraduate physics college courses

europass

Curriculum Vitae

Violeta Iancu

EDUCATION AND TRAINING

2001-2006

PhD in Physics

Ohio University, Athens, Ohio, USA

Thesis: Single molecule switches and molecular self-assembly: Low temperature STM investigations and manipulations Replace with education or training organisation's name and locality (if relevant, country)

1995-2000

Diploma in Physics

Diploma engineering in Physics, University of Bucharest, Romania

Applied nuclear physics

PERSONAL SKILLS

Mother tongue(s): Romanian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C2	C2	C2	C2
French	B1	B1	A2	A2	A2

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user
Common European Framework of Reference for Languages

Computer skills

- Good command of Microsoft Office tools and of Linux environment tools; experience with Fortran and C/C++ programming, Origin; user knowledge of Quantum ESPRESSO and GEANT4.

Organisational / managerial skills

- Leadership: coordinating the group that is in charge of the implementation and R&D activities in industrial applications and medical radioisotope production with gamma beam in the Gamma Driven Experiment Department at ELI-NP.
- Project responsible for the ELI-NP team involved in the ELI-RO project: Security applications development at ELI-NP: detecting concealed threatening materials by using Nuclear Resonance Fluorescence and 2D/3D tomography with gamma beams.

Communication skills

- Great communication skills gained through my research experience working in USA, Belgium and Romania. I effectively coordinated several collaborations that culminated in high-impact publications. I have worked and successfully collaborated with researchers from different backgrounds and cultures.

ADDITIONAL INFORMATION

Publications (selected)

1. G.V. Turturica and **V. Iancu**, Homomorphic inference of deep neural networks for zero-knowledge verification of nuclear warheads, **Scientific Reports 13, 7464 (2023).**
2. P.-A. Söderström et al., Design and construction of a 9 MeV gamma-ray source based on capture of moderated plutonium-beryllium neutrons in nickel, **App. Rad. Iso. 191, 110559 (2023).**
3. G.V. Turturica, **V. Iancu**, and C. A. Ur, A neural-network based approach to cargo inspections using photon spectroscopy, **Nucl Instrum and Methods in Physics Research A 1010, 165553 (2021).**
4. G.V. Turturica, **V. Iancu** et al., Effective Z evaluation using monoenergetic gamma rays and neural networks, https://doi.org/10.1140/epjp/s13360-020-00122-3, **Eur J. Phys PLUS 135:140 (2020).**
5. K. Ali, H. Ohgaki, H. Zen , T. Kii, T. Hayakawa, T. Shizuma, H. Toyokawa, Y. Taira, **V. Iancu**, G. Turturica, C. A. Ur, M. Fujimoto, and M. Katoh, Selective Isotope CT Imaging Based on Nuclear Resonance Fluorescence Transmission Method, **IEEE Trans. Nucl. Sci. 67, 1976 (2020).**
6. P.-A. Söderström, L. Capponi, **V. Iancu** et al. Unfolding of sparse high-energy γ-ray spectra from LaBr3:Ce detectors, **JINST 14 T11007 (2019).**
7. G. V. Turturica, C. Matei, A. Pappalardo, D. L. Balabanski, S. Chesnevskaya, **V. Iancu** et al., Investigation of Compton scattering for gamma beam intensity measurements and perspectives at ELI-NP, **Nucl Instrum and Methods in Physics Research A 921, 27 (2019).**
8. G. V. Turturica, **V. Iancu**, G. Suliman, C.A. Ur, Implementation of photon elastic scattering in GEANT4, **Nucl Instrum and Methods in Physics Research B 436, 68 (2018).**
9. A.T. Ngo, T. Skeini, **V. Iancu**, P. R. Redfern, L. A. Curtiss, and S, W Hla, Manipulation of Origin of Life Molecules: Recognizing Single-Molecule Conformations in β-Carotene and Chlorophyll-a/β-Carotene Clusters, **ACS Nano 12, 217 (2018)**
10. **V. Iancu**, K. Schouteden, Z. Li and C. Van Haesendonck, Electron–phonon coupling in engineered magnetic molecules, **Chem. Commun. 52, 11359 (2016).**
11. H.R. Weller, C.A. Ur, C. Matei, J.M. Mueller, M.H. Sikora, G. Suliman, **V. Iancu**, Z. Yasin, Gamma beam delivery and diagnostics, **Rom. Rep. Phys. 68 S447 (2016)**.
12. G. Suliman, **V. Iancu**, C.A. Ur, M. Iovea, I. Daito, H. Ohgaki, Gamma-beam industrial applications at ELI-NP, **Rom. Rep. Phys. 68 S799 (2016)**.
13. Y. Zhang, H. Kersell, R. Stefak, J. Echeverria, V. Iancu, U. G. E. Perera, Y. Li, A. Deshpande, K.-F. Braun, C. Joachim, G. Rapenne, and S.-W. Hla, Simultaneous and coordinated rotational switching of all molecular rotors in a network, **Nature Nanotech. DOI: 10.1038/NNANO.2016.69 (2016)**
14. K. Schouteden, Ts. Ivanova, Z. Li, **V. Iancu**, E. Janssens, and C. Van Haesendonck, Probing Magnetism in 2D Molecular Networks after in Situ Metalation by Transition Metal Atoms**, J. Phys. Chem. Lett. 6, 1048 (2015).**
15. Z. Li, K. Schouteden, **V. Iancu**, E. Janssens, P. Lievens, C. Van Haesendonck and J. I. Cerda, Chemically modified STM tips for atomic-resolution imaging of ultra thin NaCl films, **Nano Research DOI 10.1007/s12274-015-0733-y (2015).**
16. K. Schouteden, T. Ivanova, Z. Li, **V. Iancu**, K. Tahara, Y. Tobe, J. Adisoejoso, S. De Feyter, C. Van Haesendonck and E. Janssens**,** Alkoxylated dehydrobenzo[12]annulene on Au(111): from single molecules to quantum dot molecular networks, **Chem. Commun. 51, 10917 (2015).**
17. **V. Iancu,** K.-F. Braun, K. Schouteden and C. Van Haesendonck, Inducing magnetism in pure organic molecules by single magnetic atom doping, **Phys. Rev. Lett. 113, 106102 (2014).**
18. K. Schouteden, Z. Li, **V.Iancu**, D. A. Muzychenko, E. Janssens, P. Lievens, and C. Van Haesendonck, Engineering the band structure of nanoparticles by an incommensurate cover layer, **J. Phys. Chem. C 118, 18271 (2014).**
19. Z. Li, H. -Y. T. Chen, K. Schouteden, K. Lauwaet, L. Giordano, M. I. Trioni, E. Janssens, **V. Iancu**, C. Van Haesendonck, P. Lievens and G. Pacchioni, Self-doping of ultrathin insulating films by transition metal atoms, **Phys. Rev. Lett. 112, 026102 (2014).**
20. **V. Iancu**, X.-G. Zhang, T.-H. Kim, L.D. Menard, P. R. C. Kent, M.E. Woodson, J.M. Ramsey, A.-P. Li, and H. H. Weitering, Polaronic transport and current blockades in epitaxial silicide nanowires and nanowire arrays, **Nano Lett. 13, 3684 (2013)**.
21. **V. Iancu**, P. R. C. Kent, S. Hus, H. Hu, C. G. Zeng, and H. H. Weitering, Structure and growth of quasi one-dimensional YSi_2 nanophases on Si(100), **J. Phys: Condens. Matter 25, 014011 (2013)**.

22. **V. Iancu**, K.-F. Braun, K. Schouteden and C. Van Haesendonck, Probing the electronic properties of trimesic acid nanoporous networks on Au(111), **Langmuir 29, 11593 (2013).**
23. U. G. E. Perera, H. J. Kulik, **V. Iancu**, L. G. G. V. Dias da Silva, S. E. Ulloa, N. Marzari and S.-W. Hla, Spatially extended Kondo state in magnetic molecules induced by interfacial charge transfer, **Phys. Rev. Lett. 105, 106601 (2010).**
24. W. Zhu , X. Qiu, **V. Iancu**, X.-Q Chen, H. Pan, W. Wang, M. P. Paranthaman, H. H. Weitering, M. Stocks, N. Dimitrijevic, T. Rajh, H. M. Meyer, G. Eres, B. Gu, and Z. Zhang, Bandgap narrowing of titanium oxide semiconductors via non-compensated anion-cation codoping for enhanced visible-light photoactivity**, Phys. Rev. Lett. 103, 226401 (2009).**
25. **V. Iancu**, P. R. C. Kent, C. G. Zeng, and H. H. Weitering, Structure of YSi_2 nanowires from tunneling spectroscopy and first principle, **Appl. Phys. Lett**. **95, 123107 (2009).**
26. F. Jäckel, G. Perera, **V. Iancu**, K.-F. Braun, N. Koch, J.P. Rabe, S.W. Hla, Investigating molecular charge transfer complexes with a low temperature scanning tunneling microscope, **Phys. Rev. Lett. 100, 126102 (2008).**
27. **V. Iancu**, A. Deshpande, and S.-W. Hla, Manipulation of the Kondo effect via two-dimensional molecular assembly, **Phys. Rev. Lett. 97, 266603 (2006).**
28. **V. Iancu** and S. -W. Hla, Realizing a four-step molecular switch in scanning tunneling microscope manipulation of single Chlorophyll-A molecules, **Proc. Nat. Acad. Sci. 103, 13718 (2006).**
29. G. R. Newkome, P. Wang, C.N. Moorefield, T.J. Cho, P. Mohapatra, S.Li, S.-H. Hwang, O. Lukoyanova, L. Echegoyen, J.A. Palagallo, **V. Iancu**, S.-W. Hla, Nanoassembly of a new class of fractal polymers: synthesis and structure proof of a Sierpinski 'Hexagonal Gasket', **Science 312, 1782 (2006).**
30. **V. Iancu**, A. Deshpande, and S. -W. Hla, Manipulating Kondo temperature via single molecule switching, **Nano Lett**. **6, 820 (2006).**
31. K.-F. Braun, **V. Iancu**, N. Pertaya, K.-H. Rieder, and S.-W. Hla, Decompositional, incommensurate growth of ferrocene molecules on a Au(111) surface, **Phys. Rev. Lett. 96, 246102 (2006).**
32. S.-W. Hla, K.-F. Braun, **V. Iancu**, and A. Deshpande, Single-atom extraction by scanning tunneling microscope tip crash and nanoscale surface engineering, **Nano Lett. 4, 1997 (2004).**

Presentations (Selected)

- **V. Iancu**, Applications of nuclear techniques at Extreme Light Infrastructure – Nuclear Physics facility: from industrial to medical applications**,** The 2023 International Conference on Applications of Nuclear Techniques, Crete 2023, contributed talk
- **V. Iancu**, Nondestructive material inspections using brilliant gamma beams at ELI-NP, *NUSPRASEN Workshop on Nuclear Science Applications* - Helsinki, Finland 2019, Contributed talk
- **V. Iancu**, Perspectives for nuclear physics research with gamma beams at ELI–NP, *17th International Balkan Workshop on Applied Physics and Materials Science, Constanta 2017, Invited talk*
- **V. Iancu**, G. Suliman, G.V. Turturica, C.A. Ur, M. Iovea, I. Daito, H. Ohgaki, Applications of novel scintillators for research and industry 2016, Dublin, Ireland, contributed talk.
- G. Suliman, **V. Iancu**, C.A Ur, M. Iovea, I. Daito, H. Ohgaki**,** Gamma Beam Industrial Applications at ELI-NP, The 2015 International Conference on Applications of Nuclear Techniques, Crete 2015, contributed talk.
- **V. Iancu**, K.-F. Braun, K. Schouteden, C. Van Haesendonck, Kondo effect in metal-organic charge-transfer systems, International Conference on Nanoscience + Technology, Paris 2012, contributed talk.
- **V. Iancu**, K. Schouteden, C. Van Haesendonck, Porous molecular networks on metallic surfaces and their response to temperature and metallization, European Conference on Surface Science, Wroclaw 2011, contributed poster.
- **V. Iancu**, Electronic and transport properties of surface supported nanostructures, Laboratory of Solid-State Physics and Magnetism (VSM), KU Leuven, January 2010, invited seminar.
- **V. Iancu**, P.R.C Kent, T.-H. Kim, A.-P Li, L.D. Menard, M. Ramsey and H.H. Weitering, Electronic transport in YSi_2 nanowires, American Physical Society, March Meeting 2009, contributed talk.
- **V. Iancu**, C. Zeng, S. Jesse, A.P. Baddorf, and H.H. Weitering, Transport studies on ultrathin silicide nanowires, American Physical Society, March Meeting 2008, contributed talk.
- **V. Iancu**, A. Deshpande, S.–W. Hla, Manipulation of Kondo effect via two-dimensional molecular self-assembly, American Physical Society, March Meeting 2007, contributed talk.
- **V. Iancu**, A. Deshpande, S.–W. Hla, Single molecule Kondo switch, American Physical Society, March Meeting 2006, contributed talk.

Awards/
Research grants

2017-2019
- ELI-RO project in collaboration with SC Accent Pro2000 SRL
  Title: Security applications development at ELI-NP: detecting concealed threatening materials by using Nuclear Resonance Fluorescence and 2D/3D tomography with gamma beams / ELI_THREAT_DETECT

2010-2013
- FWO (Research Foundation – Flanders, Belgium) Post-doctoral fellowship
  Title: Electronic and magnetic properties of metallized nanoporous molecular networks
- Award/grant covered the salary plus extra 4000€/year as bench fee

2004-2005
- Clippinger Graduate Fellowship, Ohio University
  Award covered one year of scholarship