

Filipoiu Nicolae

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Professional Experience

Research Assistant, Romania, 2019–Present
Horia Hulubei National Institute for Research and Development in Physics and Nuclear Engineering IFIN-HH

- Developing new theoretical models to predict and enhance physical properties of materials and performance of devices.
- Perform *ab initio* calculations in order to study new materials and structures.
- Data collection, processing and interpretation.

Education

PhD, Doctoral School of Physics — University of Bucharest 2021–Present
Condensed State Physics

Master's Degree, Faculty of Physics — University of Bucharest 2019–2021
Physics of Advanced Materials and Nanostructures

Bachelor's Degree, Faculty of Physics — University of Bucharest 2015–2019
Applied Engineering Sciences in the Technological Physics Program

Baccalaureate Diploma, "Vlaicu Vodă" National College 2010–2014
Mathematics and Informatics

Projects

Towards Perovskite Large Area Photovoltaics (PERLA-PV) 2020-2023
Description of the project, at the webpage www.perla-pv.ro.

Cloud and Big Data Center for Participation in the European Open Science Cloud (CECBID-EOSC) 2022-2023
Description of the project [online](#).

Computational Design and Engineering of Functional Ferroic Interfaces (COMPFER) 2021-2022
Description of the project, at the [webpage](#).

Skills

Technical Skills: Python, C, Linux, Windows, LaTeX, *ab-initio* calculations, SISL for data acquisition.

Soft Skills: Communication, Leadership, Problem-Solving, Time Management, Adaptability.

Languages: English (Fluent), Romanian (Native).

Certifications

Driving License, Category B

2016

Honors and Awards

University of Bucharest Senate Award

2023

Award for the best scientific article: “Capacitive and inductive effects in perovskite solar cells”.

Publications

1. Nicolae Filipoiu and George Alexandru Nemnes, ”Prediction of equilibrium phase, stability and stress-strain properties in Co-Cr-Fe-Ni-Al high entropy alloys using artificial neural networks”. *Metals*, 10(12) (2020), 1569.
2. Claudiu Locovei, Nicolae Filipoiu, Andrei Kuncser, Anda-Elena Stanciu, Ștefan Antohe, Camelia-Florina Florica, Andreea Costas, Ionuț Enculescu, Luc Piraux, Victor Kuncser and Vlad-Andrei Antohe, ”Unidirectional Magnetic Anisotropy in Dense Vertically-Standing Arrays of Passivated Nickel Nanotubes”. *Nanomaterials*, 10(12) (2021), 2444.
3. George Alexandru Nemnes, Nicolae Filipoiu and Valentin Sipica, ”Feature selection procedures for combined density functional theory—artificial neural network schemes”. *Physica Scripta*, 96(6) (2021), 065807.
4. Nicolae Filipoiu, Tudor Luca Mitran, Dragos Victor Anghel, Mihaela Florea, Ioana Pintilie, Andrei Manolescu, and George Alexandru Nemnes. “Investigation of optoelectronic properties and stability of mixed-cation mixed-halide perovskite materials with machine-learning implementation”. *Energies* 14.17 (2021), 5431.
5. Nicolae Filipoiu, Amanda Teodora Preda, Dragos-Victor Anghel, Roxana Patru, Rachel Elizabeth Brophy, Movaffaq Kateb, Cristina Besleaga, Andrei Gabriel Tomulescu, Ioana Pintilie, Andrei Manolescu, et al. “Capacitive and inductive effects in perovskite solar cells: The different roles of ionic current and ionic charge accumulation”. *Physical Review Applied* 18.6 (2022), 064087.
6. Calin-Andrei Pantis-Simut, Amanda Teodora Preda, Nicolae Filipoiu, Alaa Allosh, and George Alexandru Nemnes. “Electric-field control in phosphorene based heterostructures”. *Nanomaterials* 12.20 (2022), 3650.
7. Nicolae Filipoiu, Anca G Mirea, Sarah Derbali, Calin-Andrei Pantis-Simut, Dragos-Victor Anghel, Andrei Manolescu, Ioana Pintilie, Mihaela Florea, and George Alexandru Nemnes. “Optoelectronic and stability properties of quasi-2D alkylammonium based perovskites”. *Physical Chemistry Chemical Physics* 25.4 (2023), 332-3331.
8. Mihaela Cosinschi, Amanda Teodora Preda, Calin Pantis-Simut, Nicolae Filipoiu, Ioan Ghitu, Mihnea Alexandru Dulea, Lucian Ion, Andrei Manolescu, and George Alexandru

- Nemnes. "Collective dynamics of Ca atoms encapsulated in C60 endohedral fullerenes". *Physical Chemistry Chemical Physics* (2024).
- Alaa Allosh, Calin-Andrei Pantis-Simut, Nicolae Filipoiu, Amanda Teodora Preda, George Necula, Ioan Ghitiu, Dragos-Victor Anghel, Mihnea Alexandru Dulea, and George Alexandru Nemnes. "Tuning phosphorene and MoS2 2D materials for detecting volatile organic compounds associated with respiratory diseases". *RSC Advances* 14.3 (2024), 1803-1812.
 - Anca G. Mirea, Ioana D. Vlaicu, Sarah Derbali, Florentina Neatu, Andrei G. Tomulescu, Cristina Besleaga, Monica Enculescu, Andrei C. Kuncser, Alexandra C. Iacoban, Nicolae Filipoiu, Marina Cuzminschi, George A. Nemnes, Andrei Manolescu, Mihaela Florea, and Ioana Pintilie. Electron transporting bilayers for perovskite solar cells: spray coating deposition of c-TiO₂/m-SnO₂ quantum dots. 2024. arXiv: 2406.18261.

Presentations and Conferences

- Nicolae Filipoiu, Marina Cuzminschi, Tudor Luca Mitran, Dragos Victor Anghel, George E. Stan, Cristina Besleaga, Ioana Pintilie, Kristinn Torfason, Andrei Manolescu and George Alexandru Nemnes, "Optimizing the band alignment in Methylammonium lead iodide - Cu_xNi_{1-x}O interface", *International Balkan Workshop on Applied Physics*, Oral presentation(2022).
- Nicolae Filipoiu, Calin-Andrei Pantis-Simut, Marina Cuzminschi, Dragos Victor Anghel, George E. Stan, Cristina Besleaga, Ioana Pintilie, Kristinn Torfason, Andrei Manolescu and George Alexandru Nemnes, "Investigation of the band alignment in mixed halide perovskite- Cu₂O Interfaces", *International Balkan Workshop on Applied Physics*, Poster presentation(2023).
- Calin-Andrei Pantis Simut, Alaa Allosh, Amanda Teodora Preda, Mihaela Cosinschi, Nicolae Filipoiu, and George Alexandru Nemnes. "Enhancing Biomarker Detection Using Artificial Neural Networks". *2023 International Conference on Advanced Scientific Computing (ICASC)*. IEEE. 2023, pp. 1-5.
- Rachel Elizabeth Brophy, Movaffaq Kateb, Ioan Ghitiu, Nicolae Filipoiu, Kristinn Torfason, H.G. Svavarsson, George Alexandru Nemnes, Ioana Pintilie and Andrei Manolescu, 2023, October. "OH⁻ ions can reduce the iodide migration in MAPI". In *2023 International Semiconductor Conference (CAS)* (pp. 139-142). IEEE.

Books

- Tudor Luca Mitran, Rachel Elizabeth Brophy, Marina Cuzminschi, Nicolae Filipoiu, Movaffaq Kateb, Ioana Pintilie, Andrei Manolescu, and George Alexandru Nemnes. "Ab initio studies on perovskites". *Low-Dimensional Halide Perovskites*. Elsevier, 2023, pp. 153-185.