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Hamed Tari

Nationality: Iranian **Date of birth:** 24/06/1990 **Gender:** Male

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LinkedIn: https://www.linkedin.com/in/hamed-tari-405112ab

Work: Smart&Neuro Photonics Lab Dept. of Basic and Applied Sciences for Engineering (SBAI) Via A. Scarpa 14, 00161 ROME (Italy)

WORK EXPERIENCE

University teaching assistant

Basic and applied science for engineering faculty of Sapienza University of Rome [01/02/2022 – Current]

City: Rome

Country: Italy

Tutor of the Optic course 2022

University research assistant

Basic and applied science for engineering faculty of Sapienza University of Rome [01/10/2020 – Current]

City: Rome

Country: Italy

Chemistry lecturer

Department of Private Education [09/2014 – 07/2015]

City: Tabriz

Country: Iran

Teaching Analytical, organic, and inorganic chemistry

Technical Supervisor of Advanced Electrochemical Laboratory

Tabriz University, Chemistry Faculty [02/2015 – 06/2017]

City: Tabriz

Country: Iran

Initiating, directing and executing scientific research, development, and manufacturing process strategies toward the preparation of carbon-ceramic electrodes and modification of them with different graphene-based nanocomposites.

EDUCATION AND TRAINING

PHD CANDIDATE IN MATHEMATICAL MODELS FOR ENGINEERING, ELECTROMAGNETICS AND NANOSCIENCES

Sapienza university of Roma [01/11/2020 – Current]

Address: Department of Basic and applied science for Engineering Via Antonio Scarpa, 16, 00161 Roma (Italy)

Website: https://www.sbai.uniroma1.it/department

Master of science in Nanotechnology Engineering
Sapienza University of Rome [15/09/2017 – 23/07/2020]

City: Rome
Country: Italy

During my carrier at Sapienza University, I have studied numerical simulation of an integrated photonic circuit based on surface plasmon polariton. The nonlinear activation function obtained from the studied saturable absorber structure implemented as an analogy for the biological neural synapse in neuromorphic network applications.

Master of science in Nanochemistry
University of Tabriz [06/2012 – 03/2015]

City: Tabriz
Country: Iran

I graduated with Honors in nanochemistry at Tabriz university. Dissertation titled was " Preparation of Sol-gel electrode modified with polypyrrole/reduced graphene oxide nanocomposite and its application in the electrochemical simultaneous determination of dopamine, Ascorbic acid, and uric acid in the blood samples.

Bachelor of science in Applied chemistry
Islamic Azad University, Tabriz Branch [01/2009 – 06/2012]

City: Tabriz
Country: Iran

Graduated with Honors in applied chemistry with Dissertation title: Elemental Analysis of various copper minerals with Xray fluorescence method.

LANGUAGE SKILLS

Mother tongue(s): **Azerbaijani**

Other language(s):

Persian
LISTENING C2 **READING** C2 **WRITING** C2
SPOKEN PRODUCTION C2 **SPOKEN INTERACTION** C2

English
LISTENING C1 **READING** C1 **WRITING** C1
SPOKEN PRODUCTION B2 **SPOKEN INTERACTION** B2

Turkish
LISTENING C1 **READING** B2 **WRITING** B2
SPOKEN PRODUCTION B1 **SPOKEN INTERACTION** B1

Arabic
LISTENING B1 **READING** C1 **WRITING** B1
SPOKEN PRODUCTION B1 **SPOKEN INTERACTION** B1

Italian
LISTENING A2 **READING** B1 **WRITING** A2
SPOKEN PRODUCTION A2 **SPOKEN INTERACTION** A2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

PUBLICATIONS

Photorefractive Solitonic Neural Network: an intelligent photonic tissue that mimics the biology of neural networks

Alessandro Bile, Hamed Tari, Riccardo Pepino, Arif Nabizada, Eugenio Fazio, (submitted,Optik, 2023)

Immobilization of Photorefractive Solitons by Charge Anchoring on Conductive Walls

[2023]

Hamed Tari, Alessandro Bile, Arif Nabizada, and Eugenio Fazio, Optics Letters Vol. 48, Issue 24, pp. 6508-6511 (2023)

Ultra-broadband interconnection between two SPP nanostrips by a photorefractive soliton waveguide

[2023]

Optics Express Vol. 31, Issue 16, pp. 26092-26103 (2023)

Supervised learning of soliton X-junctions in lithium niobate films on insulator

[2022]

Alessandro Bile, Mathieu Chauvet, Hamed Tari, and Eugenio Fazio, Opt. Lett. 47, 5893-5896 (2022)

Optical Soliton Neural Networks," Artificial Neural Networks - Recent Advances, New Perspectives and Applications

[2023]

E. Fazio, A. Bile, and H. Tari, Jan. 2023, doi: 10.5772/intechopen.107927

Episodic Memory, and Information Recognition Using Solitonic Neural Networks Based on Photorefractive Plasticity

[2022]

Bile, A.; Tari, H.; Fazio, E. *Appl. Sci.* **2022**, *12*, 5585. https://doi.org/10.3390/app12115585

Innovative and non-invasive method for the diagnosis of dyschromatopsia and the re-education of the eyes

[2023]

Bile, A., Bile, G., Pepino, R., Tari, H., . *Res. Biomed. Eng.* (2023). https://doi.org/10.1007/s42600-023-00263-1

Sigmoid Type Neuromorphic Activation Function Based on Saturable Absorption Behavior of Graphene/PMMA Composite for Intensity Modulation of Surface Plasmon Polariton Signals

[2022]

H. Tari; Bile, Alessandro; Moratti, Francesca; Fazio, Eugenio, PLASMONICS, ISSN 1557-1955. - (2022).

Novel Model Based on Artificial Neural Networks to Predict Short-Term Temperature Evolution in Museum Environment

[2022]

Bile, Alessandro; Tari, Hamed; Grinde, Andreas; Frasca, Francesca; Siani, Anna Maria; Fazio, Eugenio; SENSORS. - ISSN 1424-8220. - (2022).

Plasmonic-Solitonic coupling structure

[2021]

Camponeschi, Federico; Bile, Alessandro; Tari, Hamed; Fazio, Eugenio; , INTERNATIONAL JOURNAL OF SCIENTIFIC ENGINEERING AND APPLIED SCIENCE. - ISSN 2395-3470. - 7:3(2021).

Supervised and unsupervised learning using a fully-plastic all-optical unit of artificial intelligence based on solitonic waveguides

[2021]

Bile, Alessandro; Moratti, Francesca; Tari, Hamed; Fazio, Eugenio, NEURAL COMPUTING & APPLICATIONS. - ISSN 0941-0643. - (2021).

Development of sol-gel based carbon ceramic electrode modified by graphene oxide - polypyrrole nanocomposite for simultaneous determination of uric acid and dopamine in presence of ascorbic acid

[2021]

H.Tari, A. Bile, E. Fazio, International Journal of Scientific Engineering and Applied Science, 2021

Photonic implementation of an elementary unit of artificial intelligence based on solitonic waveguides

A. Bile, F. Moratti, H. Tari, E. Fazio, 2021.

Tutoring of the thesis:

1. Maryamsadat Ghoreishi, MSc thesis entitled: Smart interaction between UV light and Coronavirus nanovesicles (Oct-2020)
2. Arif Nabizada, MSc thesis entitled: Design of a buried grating structure for the optimization of Surface Plasmon Polariton wave excitation at the lower interface of a metallic nanostrip, (Oct 2022)
3. Tara Naser Hojjati, MSc thesis entitled: Polarization-resolved imaging of nanostructured media,(Jan-2023)
4. Hamed Alizadeh, MSc thesis entitled: Machine learning techniques to recognize viruses and bacteria from light scattering images, (May-2023)
5. Maryam Rafizadeh, MSc thesis entitled: Optical switch based on the modulation of the charge accumulation in plasmonic circuits(Expected graduation date: Oct-2023)

CONFERENCES AND SEMINARS

1- Design of a buried grating structure for the optimization of Surface Plasmon Polariton wave excitation at the lower interface of a metallic nanostrip

[SPIE, Optics and optoelectronics, Prague, Czech Republic, 24/04/2023 – 27/04/2023]

2- The foremost photonic workshop, Erice

[The foremost photonic workshop, Erice, 10/2022]

Hamed Tari, Alessandro Bile, Eugenio Fazio

3- Photorefractive soliton synapsis for Surface-Plasmon-Polariton circuits

[Photorefractive Photonics and Beyond conference, Trevisio, Italy, 09/2022]

Hamed Tari, Alessandro Bile, Eugenio Fazio,

4- Addressable and erasable photonic neurons using solitonic X-junctions in lithium niobate films

[Photorefractive Photonics and Beyond conference, Trevisio, 09/2022]

Alessandro Bile, Mathieu Chauvet, Florent Bassignot, Ludovic Gauthier-Manue, Hamed Tari, Eugenio Fazio,

5- Neural networking and machine learning based on photorefractive solitonic waveguides: novel all-plastic Photonic Artificial Intelligence

[Photorefractive Photonics and Beyond conference, Trevisio, 09/2022]

Hamed Tari, Alessandro Bile, Eugenio Fazio

6- Implementation of neuromorphic activation function within Surface Plasmon Polariton circuits

[ICOP2020 Italian Optics and Photonics Conference, At University Parma, Italy, 09/2020]

7- Surface Plasmon Polariton neuromorphic circuit with sigmoid activation function

[9TH EPS-QEOD EUROPHOTON CONFERENCE at Czech Technical University of Prague, 08/2020]

8- Application of carbon ceramic electrode modified by polypyrrole/reduced graphene oxide nanocomposite on the sensitive determination of dopamine in the real sample

[11th Iranian biennial electrochemistry seminar, Guilan university-Iran, 09/2014]

ORGANISATIONAL SKILLS

Organisational skills

An accomplished and energetic researcher with a solid experience in independent laboratory work towards synthesizing and characterization of nanomaterials. Motivated leader with strong organizational and prioritization abilities. Areas of expertise include

- Numerical simulation at COMSOL multiphysics, ANSYS, CST studio, Maxwell, Mathcad, Python and etc.
- Microelectronics and Semiconductor Engineering
- Optoelectronic and optical and system design
- Semiconductor Laser Technology
- Photolithography
- Two-photon 3D lithography
- Chemical and electrochemical polymerization methods
- Sol-Gel methods for nanomaterial synthesis
- X-ray Diffraction and X-ray fluorescence spectroscopy
- Surface plasmon spectroscopy
- FTIR spectroscopy
- Electroanalytical method for trace analysis
- Electron microscopy and related techniques
- DLS (Dynamic light scattering technique)
- Deep ion-beam lithography

JOB-RELATED SKILLS

Job-related skills

- Self-direction and Entrepreneurial
- Technical information technology
- independent research work
- Written & Oral Communication
- Collaboration
- Analytical thinking
- Education and Training

CERTIFICATIONS

1- Electromagnetic Wave RF, Microwave and Optics Modeling in COMSOL Multiphysics

[10/05/2022 – 17/05/2022]

Zurich

2- Application of nano-electrodes in electrochemistry studies

[09/2014]

Issued by Guilan University

3- Noble electrochemical methods (spectroelectrochemistry, photovoltaic cell)

[09/2014]

Issued by Guilan University