



# Hamed Tari

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## ● WORK EXPERIENCE

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01/02/2022 – CURRENT Rome , Italy

**UNIVERSITY TEACHING ASSISTANT** BASIC AND APPLIED SCIENCE FOR ENGINEERING FACULTY OF SAPIENZA UNIVERSITY OF ROME

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Tutor of the Optic course 2022

01/10/2020 – CURRENT Rome , Italy

**UNIVERSITY RESEARCH ASSISTANT** BASIC AND APPLIED SCIENCE FOR ENGINEERING FACULTY OF SAPIENZA UNIVERSITY OF ROME

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09/2014 – 07/2015 Tabriz, Iran

**CHEMISTRY LECTURER** DEPARTMENT OF PRIVATE EDUCATION

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Teaching Analytical, organic, and inorganic chemistry

02/2015 – 06/2017 Tabriz, Iran

**TECHNICAL SUPERVISOR OF ADVANCED ELECTROCHEMICAL LABORATORY** TABRIZ UNIVERSITY, CHEMISTRY FACULTY

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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

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01/11/2020 – CURRENT Roma, Italy

**PHD CANDIDATE IN MATHEMATICAL MODELS FOR ENGINEERING, ELECTROMAGNETICS AND NANOSCIENCES** Sapienza university of Roma

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**Address** Department of Basic and applied science for Engineering , Via Antonio Scarpa, 16, 00161, Roma, Italy |

**Website** <https://www.sbai.uniroma1.it/department>

15/09/2017 – 23/07/2020 Rome, Italy

**MASTER OF SCIENCE IN NANOTECHNOLOGY ENGINEERING** Sapienza University of Rome

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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.

06/2012 – 03/2015 Tabriz, Iran

**MASTER OF SCIENCE IN NANO CHEMISTRY** University of Tabriz

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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.

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):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
<b>PERSIAN</b>	C2	C2	C2	C2	C2
<b>ENGLISH</b>	C1	C1	B2	B2	C1
<b>TURKISH</b>	C1	B2	B1	B1	B2
<b>ARABIC</b>	B1	C1	B1	B1	B1
<b>ITALIAN</b>	A2	B1	A2	A2	A2

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

## ● ADDITIONAL INFORMATION

### PUBLICATIONS

[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)

**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)

[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**

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**

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**

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**

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**

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**

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

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## **Plasmonic-Solitonic coupling structure**

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

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

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

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

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

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## **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 nanostructure, (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)
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## **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**

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

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## **CONFERENCES AND SEMINARS**

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

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

10/2022 – The foremost photonic workshop, Erice

### **2- The foremost photonic workshop, Erice** Hamed Tari, Alessandro Bile, Eugenio Fazio

09/2022 – Photorefractive Photonics and Beyond conference, Treviso, Italy

### **3- Photorefractive soliton synopsis for Surface-Plasmon-Polariton circuits** Hamed Tari, Alessandro Bile, Eugenio Fazio,

09/2022 – Photorefractive Photonics and Beyond conference, Treviso

### **4- Addressable and erasable photonic neurons using solitonic X-junctions in lithium niobate films** Alessandro Bile, Mathieu Chauvet, Florent Bassignot, Ludovic Gauthier-Manue, Hamed Tari, Eugenio Fazio,

09/2022 – Photorefractive Photonics and Beyond conference, Treviso

### **5- Neural networking and machine learning based on photorefractive solitonic waveguides: novel all-plastic Photonic Artificial Intelligence** Hamed Tari, Alessandro Bile, Eugenio Fazio

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

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

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

### **7- Surface Plasmon Polariton neuromorphic circuit with sigmoid activation function**

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

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

## **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**

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

## **CERTIFICATIONS**

10/05/2022 – 17/05/2022

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

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Zurich

09/2014

### **2- Application of nano-electrodes in electrochemistry studies**

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Issued by Guilan University

09/2014

### **3- Noble electrochemical methods (spectroelectrochemistry, photovoltaic cell)**

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Issued by Guilan University