ILHEM BARGAOUI

Nanomaterial Scientist - Characterization And Nanofabrication

CONTACT INFORMATION

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(613) 255-5015
Ottawa, Canada

TECHNICAL SKILLS

- Three years of research lab experience
- Materials deposition techniques: physical vapor deposition, chemical liquid deposition, spin coating
- Materials characterization techniques: scanning electron microscopy (SEM), atomic force microscopy (AFM), X-Ray diffraction (XRD), and spectroscopic techniques (Raman spectroscopy, FTIR, z-scan, pump-probe)
- Experience in photolithography techniques: photoresist coating, exposure, development, and pattern transfer
- Laboratory equipment and apparatus optimization and troubleshooting skills
- Written and oral presentation skills: Scientific papers, conference presentations, and posters
- Safety protocols: Adherence to cleanroom best practices and safety protocols
- Software skills: Matlab, Photoshop, OriginPro, Latex, X'pert HighScore, Gwyddon, ChemDraw
- Bilingual (English and French)

PROFESSIONAL EXPERIENCE

Research Technician ***March 2024 – April 2024***

University of Ottawa, Ottawa, Canada

- Fabricated samples for THz second harmonic generation
- Characterized samples Via Raman spectroscopy, AFM and SEM
- Analyzed the data analysis and write reports

Visiting Research Student ***October 2021 – December 2023***

Ultrafast THz spectroscopy lab - Co-supervisor: Jean-Michel Ménard - University of Ottawa – Ottawa, Canada

- Deposited of graphene oxide and reduced graphene oxide thin film
- Characterized samples via Raman spectroscopy, AFM, and electric conductivity measurements
- Fabricated sensor arrays
- Performed electrical tests for gas-sensing measurements
- Ensured lab safety and provide training on the gas sensing set-up and spray coating set-up
- Supervised undergraduate students

Teaching Assistant TA ***January 2022 – April 2022***

University of Ottawa: Physique moderne - Marking and grading

Teaching Assistant TA ***September 2020 – June 2021***

University of Tunis EL Manar: Instrumentations and measurements – Teaching and grading

Visiting Research Student ***October 2019 – August 2020***

Ultrafast THz spectroscopy lab - University of Ottawa – Ottawa, Canada

Co-supervisor: Jean-Michel Ménard - ***Mitacs Globalink Research Award***

- Fabricated graphene oxide thin films via drop casting and spray coating
- Characterized specimen via Raman spectroscopy, SEM and AFM
- Performed nonlinear optic measurements via z-scan setup

EDUCATION

PhD in Physics ***December 2023***

University of Ottawa - Ultrafast THz spectroscopy group - uOttawa Centre for Extreme and Quantum Photonics
University of Tunis El Manar - Photovoltaic and Semiconductors Materials Laboratory

- Nanofabrication of gas sensors based on graphene oxide and its derivatives to detect chemical warfare agents and volatile organic compounds.

MSc Degree In Condensed Matter In Physics ***October 2018***

Faculty of Sciences of Tunis EL Manar

- Deposition and characterization of thin films based on the quaternary Cu_2CoSnS_4 (CCTS) using spray coating technique for solar cells applications.

BSc Degree In Physics ***June 2016***

Faculty of Sciences of Tunis EL Manar

Baccalaureate In Mathematics ***June 2013***

High school – Mohamed Ali Annabi – Ras Jebal, Tunis

Peer-reviewed Publications

I. Bargaoui, N. Bitri, J.-M. Ménard, Effect of reduced graphene oxide film thickness on a chemiresistor's response to volatile organic chemicals and warfare agents (in progress).

I. Hemmedi, N. Bitri, M. Mezyen, **I. Bargaoui** and J.-M.Ménard, Chemically Reduced Graphene Oxide Thin Films for Efficient Photocatalytic Degradation of Azo Dyes under Natural Sunlight Irradiation (in progress).

N. Alzate-Carvajal, J. Park, **I. Bargaoui,** R. Rautela, Z. J. Comeau, L. Scarfe, J.-M. Ménard, S. B. Darling, B. H. Lessard, and A. Luican-Mayer, Arrays of Functionalized Graphene Chemiresistors for Selective Sensing of Volatile Organic Compounds, *ACS Applied Electronic Materials*. 2023.

I. Bargaoui, N. Bitri, J.-M. Ménard, A Comparative Investigation of Chemically Reduced Graphene Oxide Thin Films Deposited via Spray Pyrolysis, ACS Omega 7, 11973−11979, 2022.

I. Bargaoui, N. Bitri, S. Dridi, and I. Ly, Cu_2CoSnS_4 thin films as suitable absorber layers for photovoltaic applications; synthesized by spray pyrolysis, Mater. Res. Express 6, 086410, 2019.

Conference Contributions

- Schawlow-Townes Symposium on Photonics

12 October 2023 Ottawa, Canada
Poster: Graphene oxide and its derivatives: from chemical fabrication to optical grating and gas sensing applications

- International Conference on Infrared Millimeter and Terahertz Waves 48th (IRMMW-THz) (volunteer)

17 – 22 September, 2023 Montreal, Canada

- Colloque National des Technologies des Matériaux en couches minces CNTMCM 2022

30 June - 2 July 2022 Tunis, Tunisia
Poster: Thickness dependency of reduced graphene oxide thin films to gas sensing

- International Workshop on Quantum Circuits in 2D Materials QC2DM

25 - 28 May 2022 Ottawa, Canada
Poster: Fabrication and characterization of graphene oxide and reduced graphene oxide thin films

- Advanced materials and Green Energy Conference (AMGEC)

04 - 07 FEBRUARY 2021 Tunis, Tunisia
Poster: Study of nonlinear optical properties of graphene oxide thin films deposited by spray pyrolysis technique

- The Second Days of Thin Film Materials Technologies

04 - 07 JULY 2019 Tunis, Tunisia
Poster: Study of optical properties of graphene oxide thin films deposited by spray pyrolysis technique

- The First Day of junior researchers in materials sciences

04 - 07 JULY 2018 Tunis, Tunisia
Oral communication: Synthesis of Cu_2CoSnS_4 thin films prepared via Spray Pyrolysis Technique for photovoltaic cells