

## Education

- **Bachelor's degree of science "General Physics" | 2010-2013 | Lebanese University**
- **Bachelor's degree of science (Honours) | 2013-2014 | University of Sydney**  
First class Honours thesis: "Controlling Four Wave Mixing Phase Matching Condition using Stimulated Brillouin Scattering". Supervisors: Prof. Benjamin Eggleton, Dr. David Marpaung and Dr. Mattia Pagani.
- **Master's degree of Science (Research) | 2015-2017 | University of Sydney**  
Master's thesis: "Analysis of The Modification of Four-Wave Mixing Phase Matching by Stimulated Brillouin scattering". Supervisors: Prof. Benjamin Eggleton and Prof. Martijn De Sterke.
- **Doctor of Philosophy degree of Science (Research) | 2018- Current | University of Sydney**  
PhD's thesis: "First-principles studies of carbon-based structures for sensing, semiconducting and superconducting nano-electronic devices". Supervisors: Prof. Catherine Stampfl and Dr. Sherif Abbas.

## Teaching Experience

- University of Sydney casual tutor for 1<sup>st</sup> year undergraduate physics students.
- University of Sydney Indigenous Tutorial Assistance Scheme (ITAS) tutor (2020-current).
- University of Sydney Disability services casual tutor Scriber Exam Supervisor (2019-current):
- University of Sydney 2<sup>nd</sup> and 3<sup>rd</sup> year physics undergraduate exam + assignment marker (2015-2017, 2018-current):
- Ezy Math & Tutor Lim math tutor from Grade 1 till University students (average 3 students /week) (2016-current).

## Supervisory Experience

- **Currently supervising two PhD students on the following projects:**
  1. **Lewis Watt:** 2D-Materials as Potential Gas Sensors: A DFT+NEGF Study.
  2. **Jake Carpenter** First principle DFT investigation exploring the effects of strain and magnetic properties of 2D materials with structure  $M_xCr_{4-x}N_{4-x}$  for  $M = Cr, Mn$  and  $Fe$ .

## Publications

1. **El-Abed Haidar**, Martijn de Sterke, Benjamin Eggleton, "Analysis of the modification of four-wave mixing phase matching by stimulated Brillouin scattering." *Journal of Optical Society of America B*, 34 (2017) 516-526.
2. **El-Abed Haidar**, Sherif Abdulkader Tawfik, Catherine Stampfl, Kimihiko Hirao, Kazunari Yoshizawa, Safinaz H. El-Demerdash, Takahito Nakajima, and Ahmed M. El-Nahas. "Electronic Transport Investigation of Redox-Switching Azulenequinones/Hydroquinones via First-Principles Studies." *Physical Chemistry Chemical Physics* 21 (2019) 17859-17867.
3. **El-Abed Haidar**, Sherif Abdulkader Tawfik, Catherine Stampfl, Kimihiko Hirao, Kazunari Yoshizawa, Safinaz H. El-Demerdash, Takahito Nakajima, and Ahmed M. El-Nahas. "First principles investigation of Redox Switching for N, B doped and co-doped Azulenequinones/Hydroquinones." *Advanced Theory and Simulations* (2020) 2000203.
4. "First-Principles Investigation of Gas-Sensing Characteristics of Hydrogen Peroxide doped into Phosphorene and Molybdenum Disulfide Monolayers." Lewis Watt, **El-Abed Haidar**, Catherine Stampfl. In preparation.
5. **El-Abed Haidar**, Sherif Abdulkader Tawfik, Catherine Stampfl. "Charge Transfer of Twist-Angle-Dependent Phosphorene-Graphene Heterobilayers." Accepted in *Journal of Physical Chemistry C* on XX November 2021.
6. **El-Abed Haidar**, Sherif Abdulkader Tawfik, Catherine Stampfl. "Towards the realization of two-dimensional MgB<sub>2</sub>." Submitted.

## Conference Publications

- "Theoretical study of tuning four-wave mixing phase matching by stimulated Brillouin scattering". **El-Abed Haidar**, Martijn de Sterke, Benjamin Eggleton. *Australian and New Zealand Conference on Optics and Photonics* (2015).

## Conference Presentations

- 10 min talk presentation at American Physics Society (APS) March meeting conference 2021.
- Poster presentation at DPG Spring Meeting of the Surface Science 2021.
- Poster presentation at the 43rd Condensed Matter & Materials Meeting 2019
- Asia-Pacific Association of Theoretical and Computational Chemists (APATCC 2019) Volunteer + poster presenter.
- OSA+SPIE +CUDOS student outreach member (2015-2017) (promote optics for Australian high school students).

## Awards:

- The 43rd Condensed Matter & Materials Meeting 2019 Student Award Poster Presentation Session Winner.

## Non-Academic Experience

- 6+ year customer service experience with Kingsgrove Newsagency (up to 15 hr/day 4 days/ week)

## Skills & Abilities

- **Computer skills:** C++, Matlab and Python, Microsoft Office (Word, Excel, PowerPoint); Latex (Overleaf and Share latex); Origin Pro; Linux.
- **Density Functional Theory Computational skills:** VASP, SIESTA, Quantum Espresso, Fleur, Avogadro, EDIS, VESTA.