Letícia Magalhães

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RESEARCH EXPERIENCE

January to April, 2019

Intern at the Optical and Wireless Transmission Research Group

Corning Incorporated, Sullivan Park, Corning NY.

- Participated in modeling and experimental work in integrated photonics.
- Worked on an exploratory project to design a short integrated photonic coupler robust to misalignment.

2017 – 2018

Undergraduate Research Internship

Optical Communications Laboratory, State University of Campinas.

- Project: *Self-aligned Photonic Couplers Based on Optical Forces.* Advised by professor Paulo Dainese.
- The goal was to design a photonic coupler self-aligned by optical forces. By designing the waveguides to favor the excitation of attractive modes, I investigated requirements for self-alignment.

2016 – 2017

Undergraduate Research Internship

Optical Communications Laboratory, State University of Campinas.

- Project: *Study and Fabrication of Photonic Nanospikes.* Advised by professor Paulo Dainese.
- Developed the fabrication of photonic nanospikes, measured and simulated its self-alignment by optical forces in the core of a photonic band-gap fiber.

2015 – 2016

Undergraduate Research Internship

Photovoltaic Research Laboratory, State University of Campinas.

- Project: *Mobile Spectrograph on a Smartphone Camera.* Advised by professor Leandro Tessler.
- Developed a 3D printed spectrograph to be attached on smartphones to use their cameras as sensors. Mesured atomic, LED, sun and many other spectra from different light sources.

For more information, please visit: www.leticiamagalhaes.science/AboutMe.html and www.leticiamagalhaes.science/ScientificPortifolio.html.

EDUCATION

2019 – currently

M. Sc. Applied Physics

Device Research Laboratory, State University of Campinas.

Expected graduation on July 2021. Coursework included: quantum mechanics, scientific writing, material sciences, and topics in optics and photonics.

- Dissertation subject: Brillouin Scattering in Microspheres Encased by Alumina thin films. Advised by professor Gustavo Wiederhecker.

2014 – 2019

B. Sc. Engineering Physics with emphasis in Optoelectronics

State University of Campinas.

- Coursework included: electronics, optics, computational physics, lasers, nonlinear optics, vacuum technologies, and more.

2014 – 2019 B. Sc. Physics

State University of Campinas.

- Coursework included: electromagnetism, quantum mechanics, solid state physics, statistical physics, and more.
- Final project subject: Photonic Couplers Self-Aligned by Optical Forces.

AWARDS AND ACHIEVEMENTS

2021 First Place Winner - 2021 OSA Innovation School

With a pitch for "Sunshinelance," a wearable UV tracker to manage sun exposure in outdoor workers.

2019 Masters' Degree Fellowship - Awarded by FAPESP

For the project "Brillouin interaction in optical waveguides and microcavities." Scholarship granted to develop the research project during masters'. Criteria included: quality of the proposal and academic records.

2018 Honorable Mention - 2018 São Paulo School of Advanced Science on Frontiers in Lasers and Their Applications

For the work "Photonic Couplers Based on Optical Forces."

2017 Undergraduate Student Researcher Fellowship - Awarded by FAPESP

For the project "Photonic Couplers Based on Optical Forces." Scholarship granted to develop the research project as an undergraduate. Criteria included: quality of the proposal and academic records.

2017 Scientific Merit Prize - XXV Scientific Initiation Congress of UNICAMP

For the project "Study and Fabrication of Photonic Nanospikes." This award was given to the top 20 out of 1698 projects completed during the year and presented at the congress.

2016 Undergraduate Student Researcher Fellowship - Awarded by PIBIC

For the project "Study and Fabrication of Photonic Nanospikes." Scholarship granted to develop the research project as an undergraduate. Criteria included: quality of the proposal and academic records.

2016 Honorable Mention - XXIV Scientific Initiation Congress of UNICAMP

For the project "Mobile Spectrograph on a smartphone camera". This award was given to the top 40 out of 1711 projects completed during the year and presented at the congress.

2015 Undergraduate Student Researcher Fellowship - Awarded by PIBIC

For the project "Mobile Spectrograph on a smartphone camera." Scholarship granted to develop the research project as an undergraduate. Criteria included: quality of the proposal, the student's grade, and merit.

PUBLICATIONS AND PRESENTATIONS AT CONFERENCES

Jarschel, P.F., **Magalhaes, L.S.**, Aldaya, I., Florez, O. and Dainese, P., 2018. 'Fiber taper diameter characterization using forward Brillouin scattering.' *Optics letters*, 43(5), pp.995-998.

Magalhaes, L. de S. and Dainese Junior, P. C., 2019. 'Photonic devices based on optical forces', *Revista dos Trabalhos de Iniciação Científica da UNICAMP*, Campinas, SP, (26).

Magalhaes, L. de S. and Dainese Junior, P. C., 2017. 'Estudo e Fabricação de Nanopontas Fotônicas.' *XXV Congresso de Iniciação Científica da Unicamp*, Campinas.

Magalhaes, L. de S. and Tessler, L. R., 2016. Espectrógrafo portátil usando a câmera de um smartphone. *XXIV Congresso de Iniciação Científica da Unicamp*, Campinas.

Submitted **Magalhaes, L.S.**, Alegre, T. P. M. and Wiedehecker, G., 2021. 'Pseudo-bulk Brillouin interaction: tailoring surface acoustic waves via conformal nanometric films on glass microspheres.' *4th Workshop on Optomechanics and Brillouin Scattering (WOMBAT)*, Erlangen.

LEADERSHIP AND EXTRACURRICULAR

2020 Vice-President of the UNICAMP Optical Society Students Chapter

Dedicated my activities to diversity and inclusion projects.

- Acted as a liaison between the LGBTQI+ activist group at UNICAMP to ensure following OSA initiatives (e.g., planning of the LGBTQI+ in STEM week) would be aligned to their specific demands.
- Organized brave-space discussions for women in the Physics Institute and a workshop with the OSA ambassador Niamh Kavanagh.

2019 President of the UNICAMP Optical Society Students Chapter

Managed 23 members, organized activities ranging from an international conference to outreach activities. The largest events held in my term were:

- *International OSA Network of Students (IONS) and Escuela Latinoamericana de Optica*, hosting 119 attendees from 7 different countries. My responsibilities included: working with invited speakers, being in charge of the budget, requesting grants and sponsorship, assisting attendees with housing, funding, and paperwork.
- *Fisica nas Ferias*, a conference for high-school students. For five days, 102 students attended courses on optics, cosmology, medical physics, solar cells, and superconductivity. This was a joint effort with the Physics Institute at UNICAMP.

2017 Academic Director of the Physics Institute Students' Union

Organized welcome events for incoming college students. Coordinated voting of outstanding professors to award and recognize teaching efforts by the faculty members.

2015 Peer Tutor for Calculus I at State University of Campinas

Provided tutoring of undergraduate students.

2015 Chief Financial Officer at Quanta Jr

Quanta Jr is a physics junior enterprise. There, I supervised two financial assistants to manage the budget, cash-flow, contracts, and other legal aspects of the enterprise.

2014 Financial Assistant at Quanta Jr

Worked on quotation for expenses, organized cash-flow reports.

CONFERENCES AND SCHOOLS

2021 *OSA Innovation School*, online.

2020 *OSA Student Leadership Conference*, online.

2020 *Frontiers in Optics*, online.

2019 *International OSA Network of Students (IONS) and Escuela Latinoamericana de Óptica (ELO)*, State University of Campinas, Sao Paulo, Brazil.

2018 *Poster Presentation* "Photonic Couplers Based on Optical Forces" at the São Paulo School of Advanced Science on Frontiers in Lasers and Their Application and XVI Jorge Andre Swieca School.

2018 *Poster Presentation* "Photonic Couplers Based on Optical Forces" at XXVI Scientific Initiation Congress of UNICAMP.

2018 *OFC diversity participation sponsored by OSA and Corning Inc.*, San Diego, USA. Granted by OSA a waived registration and travel expenses sponsored by Corning to attend the first "Suzanne R. Nagel Lounge".

2018 *OSA Student Leadership Conference*, Washington D.C. , USA. Sponsored by OSA.

2017 *Poster Presentation* "Study and Fabrication of Photonic Nanospikes" at XXV Scientific Initiation Congress of UNICAMP.

SKILLS AND EXPERIENCE

Simulation

Comsol Multiphysics: 4+ years of experience with Comsol. Proficient in the physics: Electromagnetic waves, Solid Mechanics and PDE Interfaces.
Lumerical: Beginner level.

Programming Languages

Python: Proficient with 2+ years of experience. Used for: data analysis, data visualization and equipment control via pyVisa for automated experiments.
Mathematica: Proficient with 5+ years of experience.
Matlab: Intermediate. Used for interfacing with Comsol via LiveLink.

Experimental

Clean Room: Trained at the Cornell NanoScale Science and Technology Facility. Additionally, I have experience with HF etching of nanospikes.
Focused Ion Beam and Scanning Electron Microscope: Trained at Center for Semiconductor Components of the State University of Campinas.
Fiber Optics: Experience with optical fiber manipulation, taper pulling, and assembling optical setups.

3D modelling

Blender: Intermediate level. You can find some of my creations at http://www.leticiamagalhaes.science/w_3D.

Languages

English: Fluent.
Portuguese: Native.

REFERENCES

Advisor

Dr. Gustavo Wiederhecker - Professor at the State University of Campinas.
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Previous Supervisor

Dr. Paulo Dainese - Research Director Optics and Wireless Transmission at Corning Incorporated.
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