

ROBERTO ALEJANDRO ALVAREZ AGUIRRE

Age: 27 years

Citizenship: Mexican



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PROFESSIONAL OVERVIEW

B.Sc. in Chemical Engineering from Autonomous University of Nuevo Leon (Mexico) with orientation on physical chemistry and thermodynamics. English Language certification by Natural Learning Corporation NLC (Mexico). Industrial experience as Intern Process Engineer at KEMET Electronics, an academia worker as research assistant at CREOL, The College of Optics and Photonics at the University of Central Florida (Visiting Student). M.Sc. in Industrial-Physics Engineering at Autonomous University of Nuevo Leon (Mexico). Currently pursuing a PhD degree at CREOL, The College of Optics and Photonics under the tutorship of Prof. Dr Leonid Glebov. Preferred research areas: Lasers, glass fabrication technology, nonlinear optics, photosensitive glasses.

CORE QUALIFICATIONS

Creative element
Innovative thinking
Hard-working
Promoter of teamwork

Leadership
Quick learner
Determination
Detail Oriented

ACCOMPLISHMENTS

- Vice-president of SPIE Student Chapter at Autonomous University of Nuevo Leon (Mexico).
- Secretary of OSA Student Chapter at Autonomous University of Nuevo Leon (Mexico).
- Chief-in-charge of two guided-visits for university students to KEMET Electronics Company. Attendance average: 30 people.
- Coordinator of a biomass (*marine algae*) pyrolysis experiment devoted to the recovery of bio-oils for the sustainable-energies industry.
- Chair on "Coffee Science" OSA and SPIE Student Chapters activity.
- Competitor of the National Competition "Innovation Award 2014" from CEMEX (Cements of Mexico). Project title: "Laser roughness sensor" Project number: 2014016.

SKILL SET

Tools: Office (for Windows and Mac OS X), 3D Design, MATLAB and COMSOL Multiphysics (basic level).

EDUCATION

- Present** **Doctor of Philosophy in Optics and Photonics (currently enrolled)**
CREOL, The College of Optics and Photonics at the University of Central Florida.
Orlando, Florida, United States of America.
Grade Point Average: 3.2 out of 4.0
- 2016** **Master of Science: Industrial-Physics Engineering**
School of Physical and Mathematical Sciences at the Autonomous University of
Nuevo Leon.
San Nicolas de los Garza, Nuevo Leon, Mexico.
Grade Point Average: 90.28 out of 100
- 2013** **Bachelor of Science: Chemical Engineering**
School of Chemical Sciences at the Autonomous University of Nuevo Leon. San
Nicolas de los Garza, Nuevo Leon, Mexico.
Grade Point Average: 80.74 out of 100
- 2010** **Certification on: English Language**
Natural Learning Corporation NLC.
Monterrey, Nuevo Leon, Mexico.

THESIS/DISSERTATION

- MSc.** **“Fiber optics technology: fabrication, analysis and applications”**
- Through the ‘*stack and draw*’ fiber fabrication method we break down the fabrication process of the ‘*Octogonal-antiresonant non-touching hollow-core fiber*’. Afterwards, we delve extensively in the optical and structural analysis of optical wave propagation within these hollow core fibers. Concluding with the development of fiber-based devices and applications such as ‘*Mode selective photonic lanterns MSPLs*’ and a ‘*Fiber optic roughness sensor by means of Fresnel reflection*’.

EXPERIENCE

- 06/2017 to 08/2017** **Summer Intern - Graduate Internship (PhD.)**
Nokia *Bell Laboratories*
Holmdel, New Jersey, United States of America.
- Description of activities: Fabrication of fiber-based devices for EDFAs and transmission experiments utilizing micro-structured specialty optical fibers. Fine measurements and characterization of optical devices. Low-coherence interferometry experiments.
- 07/2015 to 01/2016** **Research Assistant (J1 Scholar) - Graduate Internship (MSc.)**
CREOL, The College of Optics and Photonics - University of Central Florida
Orlando, Florida, United States of America.

Description of activities: Micro-structured optical-fiber fabrication. Fabrication and testing of fiber-based devices: mode selective photonic lanterns (MSPLs) and 6-to-1 high-power pump combiners. 3D design and printing.

06/2013 to 01/2014

Intern Process Engineer - Undergraduate Internship (BSc.)
KEMET Electronics - Monterrey Plant III
San Nicolas de los Garza, Nuevo Leon, Mexico.

Description of activities: Development of a saving project by means of the recovery and reuse of aluminum oxide (Al_2O_3) slurries. Chemical engineering processes simulation. Various tasks related to chemical engineering.

CONGRESS ATENDANCE

- R. Alvarez-Aguirre, “2016 UANL SPIE Student Chapter Activities”. *SPIE Photonics Europe (2016) - Brussels, Belgium*. (Poster presentation)
- R. Alvarez-Aguirre, J. Reyes-Rodríguez, R. Selvas-Aguilar, A. Castillo-Guzmán “Fiber-optic roughness sensor by means of Fresnel reflection”. *Latin America Optics and Photonics LAOP (2014) - Cancun, Quintana Roo, Mexico*. (Poster presentation)
- R. Alvarez-Aguirre, J. Reyes-Rodríguez, R. Selvas-Aguilar, A. Castillo-Guzmán “Fiber-optic roughness sensor by means of Fresnel reflection”. *Frontiers in Optics and Laser Science FiO/LS (2014) - Tucson, Arizona, United States of America*. (Poster presentation)
- *Chemical Engineering International Congress (2007) - Monterrey, Nuevo Leon, Mexico*. (As attendant)

PUBLICATIONS

- R. Alvarez-Aguirre, J. Reyes-Rodríguez, R. Selvas-Aguilar, A. Castillo-Guzmán “Fiber optic roughness sensor by means of Fresnel reflection”. *Acta Universitaria Multidisciplinary Scientific Journal ISSN 0188 - 6266*.
- A. Van Newkirk, J. E. Antonio-Lopez, J. Anderson, R. Alvarez-Aguirre, R. Amezcua-Correa, and A. Schülzgen “Higher order modes in anti-resonant hollow core fibers” *OSA Specialty Optical Fibers, Vancouver Canada, July, paper SoM3F.4*.
- A. Van Newkirk, J.E. Antonio-Lopez, J. Anderson, R. Alvarez-Aguirre, Z.S. Eznaveh, G. Lopez-Galmiche, R. Amezcua-Correa and A. Schülzgen “Modal analysis of antiresonant hollow core fibers using S-2 imaging” *Optics Letters 41(14), pp.3277-3280*.

PRESENTATIONS/TALKS

“Fiber based devices and specialty fibers in optical systems”

Summer Intern Talks 2017.

Location: Nokia, *Bell Laboratories*. Conference rooms. Holmdel, New Jersey, USA.

Date: August 16th, 2017.

“Hollow Core Optical Fibers”

OSA and SPIE Annual Congress | PHOTON 2016.

Location: ALFA Planetarium. Conference rooms. San Pedro Garza Garcia, Nuevo Leon, Mexico.

Date: April 15th, 2016.

“The Journey of a Photon”

Celebrating the International Year of Light 2015.

Location: School of Physical and Mathematical Sciences at the Autonomous University of Nuevo Leon. Auditorium ‘Dr. Eladio Sáenz Quiroga’.

Date: February 12th, 2015.

“Process Design”

OSA and SPIE Optical Workshops 2014.

Location: Center for Research in Physical and Mathematical Sciences at the Autonomous University of Nuevo Leon. Room 1.

Date: November 10th, 2014.

MEMBERSHIPS/SCHOLARLY SOCIETIES

- Optical Society of America OSA.

OSA Member Name: Roberto Alvarez

OSA Member Number: 1127733

- Society of Photo-Optical Instrumentation Engineers SPIE.

SPIE Member Name: robertoalvarez

SPIE Member Number: 3641476

REFERENCES

Dr. Arturo Alberto Castillo Guzmán

Professor of Physics, Optics and Photonics

Coordinator of Academic Programs at the School of Physical and Mathematical Sciences at the Autonomous University of Nuevo Leon.

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Dr. Jose Javier Sanchez Mondragon

Senior National Researcher (SNI III)

Professor of Physics, Optics and Photonics at INAOE, The National Institute of Astrophysics, Optics and Electronics.

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Mr. Gilberto Martinez Becerra

Manager of Maintenance Department at KEMET Electronics, Ceramic Business Group México (KEMET of Mexico).
Monterrey Plant III.

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