



## Jala Mahmoud El-Azab

### PERSONAL INFORMATION

#### POSITION

- Lecturer, Dept. of Engineering Applications of Lasers, National Institute of Laser Enhanced Sciences- NILES, Cairo University  
- Vice Director of Laser Technology Center, NILES.

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#### CITIZENSHIP

Egypt.

#### DATE OF BIRTH

24th November, 1975

#### LANGUAGES

English: Fluent written and spoken.  
French: Fluent written and spoken.  
Arabic: Mother Tongue

### ACADEMIC HISTORY

**Ph.D. in Chaotic Semiconductor Laser Diodes** from Engineering Applications of Laser department- NILES- Cairo University (Feb 2007)

**M.Sc in the Nonlinearity of Semiconductor Laser Diodes** from Engineering applications of Laser department- NILES- Cairo University (Nov. 2002)

**Diploma in Laser Applications in Industry, Communications and Optical Systems** from Niles- Cairo University (June 1999)

**B.Sc. of Electronics and Electrical Communications department** from Faculty of Engineering- Cairo University (June 1998)

**High School, Colleague Saint Vincent De Paul, Cairo** (June 1993)

## **COURSES TAUGHT**

### **MSc Program of Engineering Applications of Lasers:**

Engineering Applications of Lasers (Spring 2013- present time)  
Experimental Techniques in Laser Engineering (Spring 2008)  
Computational Techniques in Laser Engineering (Fall 2007-Spring 2008)

### **Diploma Program of Engineering Applications of Lasers:**

Experimental Techniques in Laser Engineering I (Fall 2013)  
Laser Safety (Fall 2012- present time)  
Laser Engineering I (Spring 2009- present time)  
Coordinator of Applied Projects I- II (Spring 2008- present time)  
Computational Techniques in Laser Engineering I (Fall 2007- present time)

### **Bachelor of Science of Biomedical Engineering, The Higher Institute of Engineering, EI – Shorouk:**

(2009-present time)  
Advanced Topics in Biomedical Engineering: Laser Fundamentals and Applications.  
Graduation Project

### **Quality Assurance Unit:**

How to write Course Specifications (1day course)  
How to write Course Reports (1day course)

### **Other Courses:**

Laser Safety at Laser Technology Center, NILES (July 2006-present time)  
Optoelectronics and Lasers, Compact course for Visiting Sudanese Students at Center for Advanced Software and Biomedical Engineering Consultations, Faculty of Engineering, Cairo University. (Nov. 2006)

## **RESEARCH INTEREST**

Semiconductor laser diodes  
Optical communications systems  
Secure chaotic optical communications  
Optoelectronics  
Optical logic gates  
Holography  
Photonic crystal fiber

## **NILES DUTIES**

Vice Director of Laser Technology center (2010- present time)  
Supervisor of Information Technology Center (2008- 2013)  
Member of Quality and Accreditation Center (2008- present time)  
Coordinator of Quality and Accreditation Center in department of Engineering applications of lasers, NILES, Cairo University. (2008- present time)  
Member of Laser Technology Center (2006- present time)  
Advisor for Diploma, Master And PhD degrees' students in department of Engineering applications of lasers (Fall 2006- present time)

### **Committee Assignments:**

International committee member of the annual symposium of The High-capacity Optical Networks and Enabling Technologies. (Dec 2012- present time)  
Technical Reviewer of the annual symposium of The High-capacity Optical Networks and Enabling Technologies. (July 2010- present time)  
Member in Organizing Committee of the HONET 2010 - High-capacity Optical Networks and Enabling Technologies (July 2010)  
Member in Organizing Committee of the Seventh International Conference on Laser Applications (April. 2009)  
Member in Organizing Committee of The First NILES International Workshop on Lasers and Plasmas joined with the Tenth EASTER Plasma Meeting (March 2008)  
Technical secretary of workshop on Laser Technology, in Laser Technology Services Center, NILES, Cairo University. (April 2007)  
Member in Organizing Committee of the Sixth International Conference on Laser Science and Applications (Jan. 2007)

Member of the committee of the development of the proposed curriculum of undergraduate study in NILES (still under submission) (Nov. 2006)

Member in Organizing committee of the Fifth International Conference on Laser Applications (Jan. 2005)

Member of Council of Engineering Applications of Lasers (2007-2013)

Member of Postgraduate affairs committee (2007-2012)

Member of Environment and Social Services committee (2007-2012)

Member of the committee of the development of the postgraduate curriculum of NILES (July 2006)

*Member of the committee of the development of the postgraduate curriculum of Dept of Engineering Applications of Lasers, NILES (July 2009-present time)*

## THESIS SUPERVISION

### Thesis Awarded:

1. Development of aesthetic and technical standards for technical communication between optical textile fabrics and supplements in the field of decoration, PhD, Faculty of Art, (2013)
2. Enhancing WDM Optical Switches with Wavelength Exchangers, PhD (2013)
3. Computer simulation of laser isotope separation system, MSc, (2013)
4. Laser Induced effect on the physical properties of nanometric ferrite  $\text{Ni}_x\text{Mn}_{0.8-x}\text{Mg}_{0.2}\text{Fe}_2\text{O}_4$  (2012)
5. A Study of Some Aspects of Optical Digital Holography and its Applications, MSc (2011)
6. Laser beam radiation effect on polymerization and physical properties of polymethyl methacrylate composite used as solar concentrator, MSc (2010)
7. A study of Operating parameters of Chaotic Semiconductor Laser, MSc (2009)
8. Design and Analysis of a New WDM Optical Packet Switch Architecture, MSc (2008)

### Thesis in Progress:

#### PhD:

1. Type-I entanglement source: characterization, novelty and optimization (2014)
2. Study of plasmonic waveguides and photonic crystal fiber in optical communications (2013)
3. Study of the theory of liquid photonic crystal fiber for optical communications systems (2013)
4. Creating virtual holograms for medical purposes (2013)
5. Investigation of partially premixed flames using advanced laser techniques (2013)
6. Improvement of diffuse optical imaging using different analytical methods (2013)
7. Generation and detection of ultrafast laser pulses using semiconductor laser (2011)
8. Study of the different parameters of solid state laser (2009)

#### MSc:

1. Design and implementation of an optical high voltage sensor using BGO crystal waveguide (2014)
2. Optoelectronic current transformer for intelligent HVAC networks (2014)
3. The use of spatial light modulation in recording and reconstruction of medical holograms (2013)
4. Comparative study of different modulation schemes of optical logic gates (2013)
5. Improving the endoscopic imaging using adaptive optics for chromatic aberration correction, MSc (2012)
6. Design and performance evaluation of Erbium doped fiber amplifier, MSc (2012)
7. Design and implementation of an optical imaging system of blood vessels, MSc (2010)
8. A study of secure communication by using chaotic behaviour of semiconductor laser diode MSc (2009)
9. Investigation of laser beam required for generating electric power on satellite's solar panels (2008)

## PUBLICATIONS

1. Firas Faeq K. Hussain, A. M. Heikal, Mohamed Farhat O. Hameed, Member, IEEE, Jala El-Azab, Wessameldin S. Abdelaziz, and S.S.A. Obayya, Senior Member, IEEE, "Dispersion characteristics of Asymmetric Channel Plasmon Polariton Waveguides", IEEE Journal of Quantum Electronics, Vol. 50, pp. 474-482, June 2014.
2. Jala El-Azab, Hamed Kandel, Mohamed Khedr and Hatem El-Ghandour, "Numerical Study of Transient Temperature Distribution in Passively Q-switched Yb:YAG Solid-State Laser", Optics and Photonics Journal, vol. 4, pp. 46-53, 2014.
3. Jala El-Azab, Amr El-Khodary, and Salah Hassab-Elnaby, "Increase of data bit rate of optical chaotic multiplexing using external optical injection", IEEE explorer, 10th International Conference on High Capacity Optical Networks and Enabling Technologies (HONET-CNS), pp. 199 – 203, Dec. 2013
4. Jala El- Azab and Mohamed Hemdan," A study of the influence of external optical injection on a semiconductor laser diode", IEEE explorer- 10th International Conference on High Capacity Optical Networks and Enabling Technologies (HONET-CNS), pp. 55 - 59, Dec. 2013
5. Tawfik Ismail, Jala El-Azab et Yehia Badr, " The Impact of Changing HNL-DSF Parameters on Wavelength Exchanging Four-Wave Mixing in HNL-DSF", IEEE-explorer, Second International Japan-Egypt Conference on Electronics, Communications and Computers, JEC-ECC, pp. 143-147, Dec. 2013.
6. Seham Ali El-Badry, Jala El-Azab and Abla Kamal Eldin Tawfik, " Application of Optical Fabrics as a decorative Supplementary Element in Interior Design", Proceeding of The third international Conference of Faculty of Applied Arts: Applied Arts Between Competition and Economy Support, Helwan University, Cairo, Vol 4, pp. 1061-1080,Dec 2013.
7. H.S. Hafez, J.M. El-Azab, M.S. El-Ashkar, S. Hassab Elnaby, S.K. Youssef, " Computer Simulation of Laser Radio Isotope Separation System", Isotope and Radiation Research, Vol. 45, No.1, pp 139-145, March 2013
8. Tawfik Ismail, Jala El-Azab et Yehia Badr, " Wavelength Exchanging Technologies Modeling Comparison and Validation", IEEE Explorer- High capacity networks and enabling technologies, (HONET), 9<sup>th</sup> conference on communication, networking & broadcasting, pp 97-101, Dec. 2012.
9. Khaled Fouad, Haitham Hamza Jala El-Azab and Tawfik Ismail "An enhanced OPS architecture with optical buffers", IEEE- explorer- 6th International Symposium on High Capacity Optical Networks & Enabling Technologies AIET & PUA, Alexandria, Egypt, pp.165-171, Dec. 2009.
10. J. El-Azab and A. El-Nadi, "Mitigation of the Effect of Parameter Mismatch in Optical Chaotic Communications", HONET'09 Proceedings of the 6th international conference on High capacity optical networks and enabling technologies, pp. 261-266, 2009.
11. Mohamed Hemdan, Jala El-Azab and Ashraf El-Meliegy, "A study of the synchronization recovery time of chaotic semiconductor laser", 6th International Symposium on High Capacity Optical Networks & Enabling Technologies AIET & PUA, Alexandria, Egypt, pp. 267-271, Dec. 2009
12. J. El-Azab and A. El-Nadi, "A global study of the influence of optical feedback on a semiconductor laser diode", IEEE EUROCON 2007, The International Conference on "Computer as a tool", pp. 1208-1213, Sept. 9-12, 2007.

## CONFERENCES

1. F. Faeq K. Hussain, A. M. Heikal, M. F. O. Hameed, J. El-Azab, W. S. Abdelaziz, S. S. A. Obayya, "Polarization Characteristics of Elliptical Spiral Plasmonic Photonic Crystal Fiber", The XXII International Workshop on Optical Wave & Waveguide Theory and Numerical Modelling, OWTNM 2014, Nice, France, June 2014.
2. Rasha A. H. Ali, Mohamed Farhat O. Hameed, Jala El-Azab, Wessameldin S. Abdelaziz, S. S. A. Obayya, "Highly Birefringent Index Guiding Silica Liquid Crystal Photonic Crystal Fiber" Semiconductor and Integrated Optoelectronics Conference, SIOE 2014, Cardiff, Wales, April 29th-1st May 2014.
3. J. El-Azab and A. El-Nadi, "Destabilization of shear Alfvén waves by hot electrons in a mirror plasma", The Eleventh Easter Plasma Meeting, Turin, Italy, April 2009.
4. J. El-Azab and M. Hemdan, " A study of the influence of external optical injection on a semiconductor laser diode", Eighth Conference on Modern Trends on Physics

Research, Cairo University, Cairo, April 2008.

5. Khaled M. Fouad El.Sayed, Haitham S. Hamza, Jala M. Al-Azab and Tawfik Ismail Tawfik, " Design and analysis of a new WDM optical packet switch architecture", The First NILES International Workshop on Lasers and Plasmas joined with the Tenth EASTER Plasma Meeting, Cairo University, Cairo, March 2008.
6. J. M. El-Azab and A. M. El-Nadi, "A multi-parameter study of optical feedback on a semiconductor laser diode", The sixth International Conference on Laser Applications, NILES, Cairo University, Cairo, January 15-18, 2007.
7. J.M. El-Azab and A. El-Nadi, " A study of the performance of a chaotic optical communication link", The Fifth International Conference on Laser Applications, , NILES, Cairo University Cairo, January 10-14, 2005.
8. J. El-Azab and A. El-Nadi, "Chaos encrypted laser communication," in First International Conference on Modern Trends in Physics Research, Cairo University, Cairo, April 4-7, 2004.
9. A.M. El-Nadi and J.M.El-Azab, " Influence of optical feedback on the dynamics of a semiconductor laser having a short external-cavity", First Cairo Conference on Plasma Physics and Applications: CCPA, Cairo, Vol. 34, pp. 58-63, October 2003.

### **AWARDS**

1. Award for the best 50 thesis for 2007, Best thesis for PhD at National Institute of Laser Enhanced Sciences, awarded from Cairo University, Egypt.
2. Award for the best employee in Department of Engineering Applications of Lasers, National Institute of Laser Enhanced Sciences, for 2008, awarded from the Cairo University Club.
3. Award for the best employee in Department of Engineering Applications of Lasers, National Institute of Laser Enhanced Sciences, for 2011, awarded from the Cairo University Club.

### **COMPUTER SKILLS**

Microsoft Office: Word, Powerpoint, Excel, Publisher and Page Front.

Programming:

Currently: Matlab.

Previous experience: PSPICE and C++.