Yusuf Gamal Fouad Hamoud

- **Lecturer, National Institute for Laser Enhanced Sciences (NILES), Cairo University, Egypt. (Aug. 2011- until now)**
- **Postdoctoral Researcher, Center of Photonics and Smart Materials (CPSM), Zewail City of Science, Technology and Innovation, Giza, Egypt. (Jan 2019-until now)**

Date of birth: 01 Sept. 1986
Marital status: Married
Military status: Exempt
Address:
Egypt, El Menoufia, (32659)
E-mail:
yusuf.gamal@cu.edu.eg
yusuf.gamal@gmail.com

Education

From	To	Degree	University	Estimation
Sept. 2003	July 2008	**B.Sc.** in Electrical and Electronic Engineering	Menoufia University	Excellent with honor degree (85%)
Oct. 2011	July 2012	**Diploma** in Engineering Applications of LASER	Cairo University	3.45/4.00
Sept. 2012	Mar. 2017	**MSc.** in Engineering Applications of Laser	Cairo University	3.65/4.00
Jan. 2018	Jan. 2022	**Ph.D**. in Engineering Applications of Laser	Cairo University	3.75/4.00

References

Prof. Nahed Solouma
professor of systems and biomedical engineering, King
Faisal University, Riyadh, KSA
Mobile: +966 555799545
E-mail: nsolouma@kfu.edu.sa
Riyadh, Kingdom of Saudi Arabia

Prof. Mohamed Farhat
Professor, Center for Photonics and Smart Materials (CPSM),
Zewail City of Science and Technology
Mobile: +20 1067414778
E-mail: mfarahat@zewailcity.edu.eg
6 th of October City, Giza, Egypt

Language

Arabic
English

Skills

Self-learning
Team Working
Communication Skills
Work under pressure
Management
Demonstration

PERSONAL DETAILS:

Current Positions	➢ Lecturer, National Institute for Laser Enhanced Sciences (NILES), Cairo University, Egypt.	(Aug. 2011 – until now)
	➢ Postdoctoral Researcher, Center for Photonics and Smart Materials (CPSM), Zewail City of Science, Technology and Innovation, Giza, Egypt.	(Jan. 2019 – until now)
Date of birth	01 September 1986	
Nationality	Egyptian	
Gender	Male. Civil	
Marital status	Married	
Military status	Exempt	

EDUCATION

From	To	Degree	University	Estimation
Sept. 2003	July 2008	**B.Sc.** in Electrical and Electronic Engineering	Menoufia University	Excellent with honor degree (85%)
Oct. 2011	July 2012	**Diploma** in Engineering Applications of LASER	Cairo University	3.45/4.00
Sept. 2012	Mar. 2017	**MSc.** in Engineering Applications of Laser	Cairo University	3.65/4.00
Jan. 2018	Jan. 2022	**Ph.D**. in Engineering Applications of Laser	Cairo University	3.75/4.00

PROFESSIONAL REGISTRATION

From	To	Authority	Division
2008	Until now	Egyptian Syndicate of Engineers	Electrical and Electronic

RESEARCH STATEMENT AND RESEARCH INTERESTS

My research interests are in electromagnetics and optical devices modeling. My keen interest in this area stems from a strong desire to solve urgent societal problems in energy, health, and communications fields. Optical devices open new horizons and offer innovative solutions in the field of solar energy harvesting through modern solar cells. Plus, they offer a new kind of ultra-fast communication devices. Moreover, a new generation of highly sensitive health and biological sensors can also be created by these devices. My research specifically focuses on:

- Using accurate computational techniques for modeling and simulation of novel optical devices.
- Present new optical splitters, modulators, polarizers, and sensors with ultra-high-performance specifications.

Computational Photonics

- Broad knowledge of numerical modeling of photonic devices based on finite difference time domain method via Lumerical software package.
- Working knowledge of modal analysis of various electromagnetic devices using finite element method via COMSOL Multiphysics Software.
- Basic knowledge of nonlinear optics and multimode interference devices.
- Hands on experience in numerical methods implementation using MATLAB.

Plasmonics and Nano-photonics

- Optical Metallic nanostructures and Plasmonic materials employed with basic photonics platforms such as Photonic Crystal Fibers, optical fibers and Silicon-on-Insulator Platforms.

Graphene and Phase Transition Materials in Nano-photonics and Optoelectronics

- Graphene plasmonics and optoelectronics at THz and infrared.
- Electromagnetic and transport theory of graphene devices.
- Phase Change Materials for Photonics.

Electromagnetics and Electro-physics

- Nano-electromagnetism, light management, and harvesting.
- Metamaterials, electromagnetic wave propagation and scattering in complex medium.

Membership of Professional Associations

- European Physical Society (EPS).
- Egyptian Syndicate of Engineers.

Reviewer (6 prestigious international journals)

IEEE Sensor, Optoelectronics and Electromagnetics Applications, Optics Express, Optical and Quantum Electronics Journal, International Journal for Numerical Methods in Biomedical Engineering, Optical Engineering.

RESEARCH GRANTS

No.	Project Title	Role	Funding Source	value	Period	
					From	To
1	Photonic threshold alarm tool for water pollutants	Researcher	STDF, Egypt	£90,350	Nov. 2021	Jan. 2023
			British Council, UK	£77,336		

ACADEMIC SUPERVISION (MSc. and Ph.D)

No.	Student name	University	Degree	Thesis title	Year
1	Mai Abdelghaffar Abdelhakem	Cairo University - CAI	PhD	Modeling and design of highly sensitive photonic crystal fibers biosensors based on alternative plasmonic materials.	Oct. 2023
2	Shaimaa Bebars	Cairo University - (NILES)	PhD	Efficient Optical Modulation Based on Phase Changing Materials.	ongoing

SCIENTIFIC PUBLICATIONS

Journal Publications

1. **Yusuf Gamal**, B.M. Younis, S.F. Hegazy, Y. Badr, M. F. O. Hameed, S. S. A. Obayya, "Highly efficient modified dual D-shaped PCF polarization filter" Optical Fiber Technology, Volume 62, 2021.
2. **Yusuf Gamal**, B. M. Younis, S. F. Hegazy, Y. Badr, M. F. O. Hameed and S. S. A. Obayya, "Highly Sensitive Multi-Functional Plasmonic Biosensor Based on Dual Core Photonic Crystal Fiber," in IEEE Sensors Journal, vol. 22, no. 7, pp. 6731-6738, 1 April1, 2022
3. M. Abdelghaffar, **Yusuf Gamal**, Reda A El-Khoribi, Wafaa Soliman, Y Badr, M. F. O. Hameed, and S. S. A. Obayya., "Highly sensitive V-shaped SPR PCF biosensor for cancer detection," *Opt. Quantum Electron.*, vol. 55, no. 5, 2023, p. 472, 2023.

4.	**Yusuf Gamal**, Younis, B.M., Abd-Elkader, David Furniss, Mark Farries, Sendy Phang, Trevor M. Benson, Angela B. Seddon, Mohamed Farhat O. Hameed & S. S. A. Obayya. Mid-infrared water pollutant sensor based on SPR-PCF. Opt Quant Electron 55, 966, 2023.
5.	Abdelghaffar, M., **Yusuf Gamal**, Reda A. El-Khoribi, Wafaa Soliman, Y. Badr, Mohamed Farhat O. Hameed, and S. S. A. Obayya. "Cancer cell detection by plasmonic dual V-shaped PCF biosensor." *JOSA B* 41, no. 1 (2024): 222-229.
6.	Solouma, N. H., Negm, N., Ahmad, H., & **Yusuf Gamal**. (2024, March). An Optically Augmented Visual Aid for Individuals with Age-Related Macular Degeneration. In Photonics (Vol. 11, No. 3, p. 245). MDPI.
	Conference Publications
7.	**Yusuf Gamal**, Salem Hegazy, M. F. O. Hameed, S. S. A. Obayya, Y. Badr, "Highly Efficient Modified D-shaped PCF Polarization Filter ", The 10th International Conference on Laser Applications (ICLA 10), NILES Institute, Cairo University, 23rd – 28th November 2019
8.	**Yusuf Gamal**, B.M Younis, S.F Hegazy, Y. Badra, M. F. O. Hameed, and S.S.A Obayya, "Highly Efficient Dual D-shaped PCF Biosensor Highly Efficient Dual D-shaped PCF Biosensor", Semiconductor and Integrated Optoelectronics (SIOE) Conference, 2021.
9.	**Yusuf Gamal**, B. M. Younis, S. F. Hegazy, Y. Badr, M. F. O. Hameed and S. S. A. Obayya, "Highly Sensitive Plasmonic PCF Biosensor," 2021 International Applied Computational Electromagnetics Society Symposium (ACES), 2021, pp. 1-2.
10.	M. Abdelghaffar, **Yusuf Gamal**, W. Soliman, Y. Badr, M. F. O. Hameed, and S. S. A. Obayya, "Early Cancer Detection by Plasmonic PCF Sensor," in 2022 International Conference on Numerical Simulation of Optoelectronic Devices (NUSOD), 2022, pp. 147–148.
11.	**Yusuf Gamal**, B. M. Younis, M. F. O. Hameed, and S. S. A. Obayya, "Plasmonic Dual D-shaped PCF Sensor for Low Refractive Index Applications," in 2022 International Conference on Numerical Simulation of Optoelectronic Devices (NUSOD), 2022, pp. 193–194.

TEACHING STATEMENT

Creativity and innovation, critical thinking and problem solving, initiative and self-direction these are just some of the 21st century skills teachers strive to develop in students. These new methods in learning process are used to ensure lifelong, active learning, relying on the student's experience in education instead of listening style. Self -learning, classroom activities, team projects and learning by doing are my tools to enhance my students' knowledge during teaching journey. Engineering is how to apply theoretical concepts in real useful applications. Therefore, I believe teaching engineering courses specially electronics and communications courses depend on active learning methods. During my classes, I always use the hand-off teaching approach by giving my students the basic knowledge and concepts, then allow their fertile imagination to think, analyze and criticize what they are learning.

To fulfill my teaching philosophy, I adopt a teaching style that aims to:

1. Challenge students to help their struggling classmates. This allows students to actively interact with each other and enhance their teaching and presentation skills.
2. Motivate students to transform the concepts they learn into laboratory experiments.
3. Encourage undergrad students to join my research team by assign small research tasks during my courses in order to give them the big picture.
4. Equip my students by the leadership skills through team projects with emphasis on time management, resource management and best solution finding.

During my courses, I always follow the self-assessment policy by involving students in the assessment process. I used to tell my students how many errors they found and then challenge them to identify the errors and suggest corrections. This can be quite an effective learning

strategy. I also encourage students to follow-up weakly lectures through interactive quizzes and assignments. Clear instructions, course outlines at course start up and exam evaluation through students' feedback are my tools to assure fairness and well assessment.

TEACH UNDERGRADUATE COURSES INCLUDE

- Physics I and II
- Mathematics I and II
- Electrical Measurements I
- Electrical Circuits I and II.
- Electronics I and II
- Power Electronics I.
- Engineering drawing and projection
- Microcontroller PIC
- Programmable Logic Control PLC
- Computational modeling using Matlab, Comsol, Lumerical
- Photonics
- Nano-photonics
- Medical instrumentation I and II.
- Digital image processing I
- Fundamentals of optics
- Laser optics
- Laser Laboratory
- Optics laboratory
- Computational techniques in laser engineering
- Introduction to Communication Engineering
- Electrical designing using AUTOCAD

TRAINING EXPERIENCE

No.	Certification	Organization	Duration
1	(Pressure , temperature , flow , level) sensors , alarm devices	Tanta Electric Company, Egypt	Aug. 2006
2	SCADA system – fundamental of electrical power – motor types	The Egyptian Company for Iron and Steel, Egypt	Jan. 2008 – Feb 2008
3	Diploma of Technology of Advanced Electronics	Center of Excellence, Ministry of Defense and Military production, Egypt	(Mar. 2009 – Jun. 2009)
4	Scientists for Egypt: Next Generation (SNG)	Academy of Scientific Research and Technology (ASRT) , Egypt	(May 2009 – May 2011)
5	FPGA design using VHDL language	Jelecom, Egypt	(Jan. 2013 – Feb. 2013)

TRAINING COURSES

Soft Skills Group Courses:

- Creating a dynamic job portfolio.
- Mastering the interview.
- Writing standard operating procedures.
- Advanced writing skills.
- Motivation training.
- Intellectual Property.
- Database using Microsoft access software
- Lab Safety.
- Writing Reports and Proposals.

Quality Courses:

- Total quality management.
- How to write Course Specifications.
- Principles of Quality Management in Higher Education Program.
- The credit Hour systems.
- Exam systems and Students evaluation.

Information Technology Courses:

- Programming using c#.
- Introduction to modeling and simulation.
- Introduction to high performance computing.
- Relational database- introduction to SQL

Management Courses:

- Time management.
- Project management fundamentals.
- Management using Microsoft project software.
- Stress management.
- Primavera

Faculty and Leadership Development Courses:

- Research ethics.
- International research publishing.
- Advanced Communication skills.
- Effective presentation.

NILES AND COMMUNITY DUTIES

1	Technical inspection engineer of medical laser devices for ministry of health, Egypt	(2013 – 2019)
2	IT Manager at Laser Technology Center	(2017 – 2019)
3	Treasurer Officer in Young Minds Cairo University section, which follow European Physical Society	(2017 – 2021)
4	Member in organizing committee of Ninth International Conference on Laser Science and Application (2016)	(11/2016)
5	Member in organizing committee of Tenth International Conference on Laser Science and Application (2019)	(11/2019)

REFERENCES

Prof. Salah Obayya
Director of center for Photonics and Smart Materials (CPSM),
Zewail City of Science and Technology
Tel: +20 2 385 40 480
Mobile: +20 1002196684
E-mail: sobayya@zewailcity.edu.eg
Sheikh Zayed District, 12588
6th of October City, Giza, Egypt

Prof. Mohamed Farhat
Professor, Center for Photonics and Smart Materials (CPSM),
Zewail City of Science and Technology
Fax: +20 2 385 17 181
Mobile: +20 1067414778
E-mail: mfarahat@zewailcity.edu.eg
Sheikh Zayed District, 12588
6th of October City, Giza, Egypt

Prof. Nahed Solouma
professor of systems and biomedical engineering, King
Faisal University, Riyadh, KSA
Mobile: +966 555799545
E-mail: nsolouma@kfu.edu.sa
Riyadh, Kingdom of Saudi Arabia

Personal Web pages