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EXPERTISE

Biophotonics, Laser Metrology, Adaptive Optics, Holographic Projection, Laser spectroscopy, Biomedical Optics, Biomedical Optical Imaging

UNIVERSITY EDUCATION

- 2021** **Doctoral degree in Engineering Applications of laser**, The National Institute of Laser Enhanced Sciences, Cairo University. Dissertation on “Three-Dimensional Reconstruction of Medical Images Using Computer Generated Holograms”, Thesis advisor: Prof. Jala El-Azab
- 2016** **M.Sc. degree in Engineering Applications of laser**, The National Institute of Laser Enhanced Sciences, Cairo University. Dissertation on “Improvement of Images by Using Adaptive Optics for Aberration Correction”., Thesis advisor: Prof. Nahed H. Solouma
- 2009** **Diploma degree in Engineering Applications of laser**, The National Institute of Laser Enhanced Sciences, Cairo University.
- 2004** **B.Sc., Systems & Biomedical Engineering Dept., Faculty of Engineering, Cairo university.**
Graduation Project: Differentiation between benign and malignant tumors in breast.
Final Grade: Very Good with honor.
Project Grade: Excellent.

PROFESSIONAL EXPERIENCE

- May 2021** **Lecturer**, Engineering Applications of Laser Department, The National Institute of Laser Enhanced Sciences, Cairo University.
- Jan. 2019** Member of the Certificates and Licenses Unit where inspections of medical laser devices are conducted across all governorates of the republic, issuing import certificates, and device description letters for various laser equipment at Laser Technology Center (LTC).
 Issuing certificates related to licensing of facilities and various laser devices.
 Participating in laser safety training courses for doctors as a main requirement for issuing laser usage permits/licenses.

INSTITUTIONAL ACTIVITIES

- Since Nov. 2024 to date** **Master Program Coordinator**, Engineering Applications of laser Department, The National Institute of Laser Enhanced Sciences, Cairo University.
- Since 2023 to** **Diploma Program Coordinator**, Engineering Applications of laser Department, The

date	National Institute of Laser Enhanced Sciences, Cairo University.
Since 2023 to date	Member of the Green Office , of Community Service and Environmental Affairs, The National Institute of Laser Enhanced Sciences, Cairo University.
Since 2024 to date	Academic Standards and Educational Programs Coordinator , Quality Assurance Unit, The National Institute of Laser Enhanced Sciences, Cairo University.
Academic year 2024	Organizing the Scientific visits for students from Engineering Institutes and Higher Institutes under the Ministry of Higher Education to the Engineering Laser Applications Department - National Institute of Laser Sciences - Cairo University
Academic years 2024-2025 & 2021-2022	Membership in the Council of the Department of Engineering Laser Applications, The National Institute of Laser Enhanced Sciences, Cairo University.
Academic year 2024-2025	Postgraduate Studies and Research Committee Member , The National Institute of Laser Enhanced Sciences, Cairo University.
Academic year 2022-2023 to date	Control Member , Engineering Applications of laser Department, The National Institute of Laser Enhanced Sciences, Cairo University.
Since Dec. 2024 to data	Member of Engineering Administration at the National Institute of Laser Enhanced Sciences, Cairo University.

HONOURS AND AWARDS

2024 Cairo University encouragement award for Engineering Sciences.

PUBLICATIONS**Peer reviewed (ISI) Journals**

- 2024**
1. Rania M. Abdelazeem, Zienab Abdel-Salam, M. Abdel-Harith “Impact of altering phase modulation and geometrical shape of laser beam via a phase-only spatial light modulator on laser-induced fluorescence”, *Optik*, September 2024.
 2. Asmaa El-Hassan, Raghda El-Saeid, Rania M. Abdelazeem, Zienab Abdel-Salam, M. Abdel Harith “Wavefront-enhanced Laser-induced breakdown spectroscopy (WELIBS) with lasers at multi-wavelengths via crystalline quartz”, *Journal of Analytical Atomic Spectroscopy*, July 2024.
 3. Rania M. Abdelazeem, Mahmoud M. A. Moussa, Salah-Hassab Elnaby, and Mostafa Agour, “Adaptive phase control of a phase-only spatial light modulator using Shack-Hartmann wavefront sensor”, *Applied Optics*, July 2024.
 4. Rania M. Abdelazeem and Mostafa Agour, “Characterization of monofocal intraocular lenses using an adaptive phase gradient-based metrology system”, *Optics and Lasers in Engineering*, February 2024.
 5. M. Abdel Harith, Raghda Hossny, Rania M. Abdelazeem, Zienab Abdel-Salam, and Asmaa Al Hassan “Wavefront-enhanced Laser-Induced Breakdown Spectroscopy (WELIBS) utilizing a crystalline silicon wafer to have a flat-top IR laser beam”, *Journal of Analytical Atomic Spectroscopy*, January 2024.
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- 2023**
6. Rania M. Abdelazeem. Mahmoud M. A. Ahmed, Mostafa Agour “Characterization of thick and eye contact lenses using an adaptive Shack-Hartmann wavefront sensor: Limitations and solutions”, *OPTIK*, May 2023.
 7. Ahmed Sheet, Rania M. Abdelazeem, Omnia Hamdy, Zienab Abdel-Salam “Influence of Laser Beam Aberrations Compensation and Spot Size on the Transmittance in Native and Optically Cleared Skeletal Muscles”, *OPTIK*, March 2023.
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- 2022**
8. M. Abdel Harith, Rania M. Abdelazeem, Omnia Hamdy, Zienab Abdel-Salam “Adaptive optics-based wavefront-enhanced laser-induced fluorescence (WELIF) for improved analytical performance”, *Analytical Methods*, December 2022.
 9. Rania M. Abdelazeem and Dahi Abdelsalam “Discrimination between normal and cancer white blood cells using holographic projection technique” *POLS ONE*, October 2022.
 10. Rania M. Abdelazeem and Omnia Hamdy “Utilizing the spatial frequency domain imaging to investigate change in optical parameters of skin exposed to thermal-hydrotherapy: Ex-vivo study”. *International Journal of Imaging Systems and Technology*, John Wiley & Sons, Inc. 2022
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- 2021**
11. Rania M Abdelazeem and Mostafa Agour “Optical inspection of single vision soft contact lenses based on an active adaptive wavefront sensor”. *Applied optics*, 61(1), 2021
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- 2020**
12. Rania M Abdelazeem, Doaa Youssef, Jala El-Azab, Salah Hassab-Elnaby, and Mostafa Agour. “Three-dimensional visualization of brain tumor progression based accurate segmentation via comparative holographic projection”. *PloS one*,15(7): e0236835, 2020.

Non-ISI Journals

- 2024** 1. Rania M. Abdelazeem, M. Abdel-Harith “Silicon Wafers or Crystalline Quartz Enhance the LIBS Technique Performance in Cairo” The African Physics Newsletter
- 2020** 2. Omnia Hamdy, Rania M. Abdelazeem “Toward Better Medical Diagnosis: Tissue Optical Clearing”, Journal of Public Health International 2 (1), 13-21

Conference proceedings (SCOPUS-Indexed)

- 2024** 1. Rania M. Abdelazeem, Zienab Abdel-Salam, M. Abdel-Harith “Discrimination between normal and inflammatory blood serum samples based on reflection-enhanced laser-induced fluorescence”, Frontiers in Optics +Laser Science, OSA, September 2024.
- 2023** 2. Rania M. Abdelazeem and Mahmoud M. A. Moussa, “Holographic visualization of normal and cancer lymphocytes using phase-only spatial light modulator”, 5Th Novel Intelligent and leading emerging sciences conference (NILES), October 2023.
- 2022** 3. Rania M. Abdelazeem and Mostafa Agour “Color Holographic Visualization of an Abnormal Retina: A Training Guide”, 4Th Novel Intelligent and leading emerging sciences conference (NILES), November 2022.
4. Rania M. Abdelazeem and Omnia Hamdy “Speckle noise reduction of modulated images generated by spatial frequency domain imaging technique based on interferometric approach”. Tissue Optics and Photonics II, SPIE. 2022
5. Rania M. Abdelazeem “Adaptive wavefront sensor for accurate characterization and evaluation of circular optical elements”. Optics and Photonics for Advanced Dimensional Metrology II, SPIE. 2022.
- 2021** 6. Dahi Abdelasalam and Rania M Abdelazeem “Discrimination between normal and cancer blood cells using phase-only spatial light modulator”. Frontiers in Optics, JTh5A. 103, 2021
7. Dahi Abdelasalam and Rania M Abdelazeem “Quantitative phase imaging by automatic phase shifting generated by phase-only spatial light modulator”. Frontiers in Optics, JTh5A. 104, 2021
- 2020** 8. Rania M. Abdelazeem, et al. "Three-Dimensional Holographic Reconstruction of Brain Tissue Based on Convolution Propagation" *JPhCS* 1472.1 (2020): 012008.
9. Rania M. Abdelazeem, et al. "Holographic Projection of Brain Magnetic Resonance Data Based White and Gray matter Segmentation" *Optical Coherence Tomography*. Optical Society of America, 2020.
10. Rania M. Abdelazeem, et al. “Monitoring the Optical Diffuse Transmittance of Skin during Thermo-Hydrotherapy via Spatial Frequency Domain Imaging : A Pilot Study” , 2021.
11. Rania M. Abdelazeem, et al. “Three-Dimensional Holographic projection of brain tumor progression”. European Conferences on Biomedical Optics – Optical Society of America, 2021.

SUPERVISION OF POSTGRADUATE STUDENTS

- 1- PhD Thesis entitled “Development of Novel Triple Mode Approach for Security Authentication of Valuable Documents Using Holograms Printed with Photochromatic Inks”. Still running (Registration data, 18-1-2022).

PROJECTS

- 1- **Project Title:** Fast label-Free Biological Cells Diagnosis with Quantitative Phase Imaging Technology, **Funded by:** STDF, **Grant Number:** 40490 (Researcher).

- 2- **Project Title:** Development of New Technique for Screening and Treatment of Retinal Disorders, **Funded by:** RDI, **Grant Number:** C2-S1-146 (Researcher).
- 3- **Project Title:** Securing valuable documents using computer-generated holograms printed with photochromic inks (Secret-CGH), **Funded by:** Deutsche Forschungsgemeinschaft (**DFG**), Germany (Researcher)

EDITORIAL/REVIEWER BOARD

Reviewer, Scientific Reports, Nature.

Reviewer, Applied Optics, OPTICA Publishing group.

Reviewer, Optics Letters, OPTICA Publishing group

Reviewer, Optics Express, OPTICA Publishing group

Reviewer, Analytical Methods

Reviewer, American Journal of Optics and Photonics

INTERNATIONAL PARTICIPATIONS

2024 School on East African Summer School on Optics and Lasers, the Abdus Salam International Center for Theoretical Physics, ICTP, Trieste, Italy.

2023 School on Professional and Communications Training for Scientists, International Center for Theoretical Physics, ICTP, Trieste, Italy.

PROFESSIONAL ACTIVITIES

- Participating in Training and judging in the **Scientific Research Workshop and Competition** organized by the Scientific Activities Administration of the General Department for Student Affairs at the Ministry of Higher Education, in October Higher Institute for Engineering and Technology - 6th of October
- Participating in **judgement of engineering graduation projects**, at Nile University - 6th of October

NATIONAL & INTERNATIONAL MEMBERSHIPS

- Member in the Egyptian society of optical science and applications.
- Member in OPTICA (Formerly OSA, the optical society of America).
- Member in IEEE (The Institute of Electrical and Electronics Engineers) from Jan. 2023 to Jan. 2024