

## PERSONAL INFORMATION

## Mohamed Ezzat

123 Chemdan-gwagi-ro, Buk-gu, Married apartment E-806, Gwangju Institute of Science and Technology (GIST), Gwangju 61005, Republic of Korea

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Sex Male | Date of birth 1987 | Nationality Egyptian

**POSITION** Postdoctoral Fellow specializing in Laser material processing and Ultra-Intense Laser Research with extensive experience in experimental setups, laser technology, and collaborative research. Possesses a strong academic background in Physics and Laser Sciences, complemented by multiple publications and contributions to the field.

## WORK EXPERIENCE

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- 1 March 2024– present    **Lecturer**  
Laser Institute for Research and Applications (LIRA), Beni-Suef University, Egypt.
- 1 Feb 2018–1 Aug 2020    **Research Assistant**  
Ultra-Intense Laser Laboratory, Center for Relativistic Laser Science, Institute for Basic Science.  
UQBF (Ultrashort Quantum Beam Facility), GIST (Gwangju Institute of Science & Technology), 123, Chemdan-Gwagi-ro (St.), Buk-gu, 61005, Republic of Korea
- 13 Feb 2017– 1 Feb 2018    **Lecture Assistant**  
Laser Institute for Research and Applications (LIRA), Beni-Suef University, Egypt
- 1 Sep 2016–16 Jan 2017    **Research Assistant (Internship)**  
Ultra-Intense Laser Laboratory, Center for Relativistic Laser Science, Institute for Basic Science. UQBF (Ultrashort Quantum Beam Facility), GIST (Gwangju Institute of Science & Technology), 123, Chemdan-Gwagi-ro (St.), Buk-gu, 61005, Republic of Korea.
- 15 Feb 2015–28 Aug 2016    **Teaching Assistant**  
Physics Department, German University in Cairo (GUC)  
New Cairo City- Main Entrance Al Tagamoa Al Khames, New Cairo (Egypt)  
[www.guc.edu.eg/](http://www.guc.edu.eg/)
- 1 Jul 2012–1 Feb 2015    **Research Assistant**  
Center of Nano-Electronics and Devices, Zewail city of Science and Technology & the American University in Cairo  
Sheikh Zayed District, 12588 6th of October City, Giza & P.O.Box 74, New Cairo  
11835, Cairo (Egypt) <http://www.zewailcity.edu.eg/> & <http://new.aucegypt.edu/>

1 Apr 2012–1 Jul 2015 **Research Assistant**  
Laser Physics Lab., Physics Dept., Faculty of Science, Cairo  
University, Giza (Egypt)

## EDUCATION AND TRAINING

1 Sep 2020–26 Feb 2024 **Ph.D in Physics**  
Department of physics, Chonnam National University, Gwangju, South Korea.  
Thesis titled by " Effect of Nanosecond Laser with High Speed Gas Flow on  
Metal Surface and Nanoparticle Synthesis "

1 Dec 2012–16 Jun 2015 **Master of Science in Laser Sciences and Interactions**  
Department of laser science interaction (LSI), National Institute of Laser  
Enhanced Sciences, Cairo University, Giza (Egypt)  
Thesis titled by "Structure and Optical properties of Nano-silicon Produced  
by Liquid Phase Pulsed Laser Ablation LP-PLA"

28 Mar 2015–17 Apr 2015 **Condensed Course on "Atomic Spectroscopy and  
Collisional Excitation in Plasmas"**  
Presented by Professor Dr. Sultana N. Nahar, Astronomy, the Ohio State  
University, Columbus, Ohio, USA  
Computational Workshop: SUPERSTRUCTURE & R-matrix Codes (Plasma,  
Atomic Structure, Atomic Processes, Workshop and Computational Workshop:  
R-matrix Calculations) Held in Faculty of Science, Cairo Univ. Under the MOA  
between Ohio State University & Cairo University

6 May 2013–1 Sep 2013 **Course: Conscious Living: A Journey To Self-Discovery**  
The American University in Cairo  
Presented by Life & Relationship, Eng. Coach: Yasmin Aboulhassan, cover  
topics (Introduction Conscious Thinking, Limiting Beliefs, Life Purpose,  
Relationships, Vision, Action Plan, Money Habitudes and Career)

1 Sep 2004–1 Jun 2009 **Bachelor of Science, Physics**  
Faculty of science, Minia University,  
Minia (Egypt)

## Papers

- 1) **Mohamed Ezzat**, Constantin Aniculaesei, Joong Wook Lee, Seong Ku Lee, and Chang Hee Nam. " Effects of laser irradiation in high-speed gas flow for surface treatments of copper." *Micromachines*, 15(11), (2024):1296.
- 2) **Mohamed Ezzat**, Constantin Aniculaesei, Joong Wook Lee, Seong Ku Lee, and Chang Hee Nam. "Nanosecond Laser-Assisted Surface Modification of Tungsten Under a High-Speed Gas Flow." Available at SSRN 4606363. ([Under review Surfaces and Interfaces](#))
- 3) **Mohamed Ezzat**, Constantin Aniculaesei, Joong Wook Lee, Seong Ku Lee, and Chang Hee Nam. "Gas flow effect on the surface modification of aluminum and silver targets irradiated by a nanosecond laser." *Optics & Laser Technology* 163 (2023): 109427.

- 4) Jiancai Xu, Leejin Bae, **Mohamed Ezzat**, Hyung Taek Kim, Jeong Moon Yang, Sang Hwa Lee, Jin Woo Yoon et al. "Nanoparticle-insertion scheme to decouple electron injection from laser evolution in laser wakefield acceleration." Scientific Reports 12, no. 1 (2022): 11128.
- 5) **Mohamed Ezzat**, M. A. El-Waily, M. Abdel-Rahman, and Yehea Ismail. "Treatment of aluminum alloys surface by nanosecond laser." Surface Review and Letters 25, no. 04 (2018): 1850079.
- 6) Elnadi, Lotfia, **Mohamed Ezzat**, I. Marzook, Gamal A. Fattah, A. M. Aboufotouh, and Yehea Ismail. "Silicon nano-crystallites prepared by nanosecond laser ablation of Si-wafers in water." International Journal of Engineering Inventions 5, no. 5 (2016): 55-59.
- 7) El Nadi, Lotfia, M. Ramadan, **Mohamed Ezzat**, M. El Nagdy, and A. Naser A. El Fetouh. "Simulation of Fusion Evaporation of Compound Nuclei Created in Ultra Intense Laser Interaction with Carbon Targets." International Journal of Research in Engineering and Science (IJRES), Volume 4, Issue 5, PP.29-34.
- 8) **Mohamed Ezzat**, Constantin Aniculaesei, Joong Wook Lee, Seong Ku Lee, and Chang Hee Nam. "A Novel Synthesizing technique for Copper, and Tungsten Nanorods by Nanosecond Laser Ablation under Gas Flow" ([In preparation to submit to Nano-Micro Letters](#))
- 9) **Mohamed Ezzat**, Lotfia ElNadi, Hussien A. Moneam, A.M. Aboufotouh, Yehea Ismail and Mostafa A. El-Sayed "Bubble Array Formation on Silver Thin Films under Nanosecond UV Laser Irradiation" ([In preparation](#))

#### Presentation/Poster

- 1) **Mohamed Ezzat**, Constantin Aniculaesei, Joong Wook Lee, Seong Ku Lee, Chang Hee Nam "High-Speed Gas Effect on Aluminium and Silver Surface Irradiated by Nanosecond Laser" 8th ICLPRP, International Conference on Laser Peening and Related Phenomena, Gyeongju, HICO (2023)
- 2) **Mohamed Ezzat**, Jin Woo Yoon, Joong Wook Lee, Seong Ku Lee, Chang Hee Nam "Study on Thermal Effect of End-Pumped Tm:YLF crystal" Oral 한국물리학회 봄 학술발표회, (KPS meeting 2022).
- 3) **Mohamed Ezzat**, Jin Woo Yoon, Seong Ku Lee and Chang Hee Nam "Thermal Analysis an End-Pumped Tm:YLF Laser at 1.9 $\mu$ m", Poster presentation at KPS meeting 2020.
- 4) Lotfia El Nadi, **Mohamed Ezzat**, Yehai Ismaiel and A. N. Abou el fetouh "Crystalline Si Nano-Wires Increased the Performance of Solar Cells" Oral presentation at ALIGARHNANO-V and STEMCON-16 during March 12-15, 2016, AMU, INDIA.
- 5) **Mohamed Ezzat**, Lotfia El Nadi, , Hussien A. Moneam, A.M. Abou el fotouh, Yehea

Ismail and Mostafa A. El-Sayed, "Bubble Array Formation on Silver Thin Films under Nanosecond UV Laser Irradiation", Oral presentation at ALIGARHNANO-V and STEMCON-16 during March 12-15, 2016, AMU, INDIA.

- 6) **Mohamed Ezzat**, Lotfia El Nadi, Hussien A. Moneam, A.M. Aboufotouh and Yehea Ismail, Mostafa A.El-Sayed "Characterization of Silver hollow particles formed by Nanosecond UV Laser Irradiation". Oral presentation The 1<sup>st</sup> international conference in materials science & engineering (ICMSE) 2016, Cairo, Egypt.
- 7) LotfiaEl Nadi, Magdy Omer, Hussein A. Moniem, Gallila A. Mehena, AbdelNaser Aboulfetouh, **Mohamed Ezzat**, Mohamed Ramadan and Dalia Osman. "High Density Laser Induced Thermal Energy" WSP International Conf. Proc. MTPR-014 Volume 9914 (2015)
- 8) **Mohamed Ezzat**, LotfiaEl Nadi, Magdy Omer, HusseinA. Moniem, GallilaA. Mehena, and AbdelNaser Aboulfetouh. "Design of Molten-Salt Chamber for Storing High Density Laser Induced Thermal Energy" WSP International Conf. Proc. MTPR-014 Volume 9914 (2015)
- 9) LotfiaEl Nadi, Magdy Omer, Hussein A. Moniem, Gallila A. Mehena, A. N.Abou el fetouh, **Mohamed Ezzat** and Mohamed Ramadan. "Plasma Suppression to Enhance Laser Inertial Fusion Processes" WSP International Conf. Proc. MTPR-014 Volume 9914 (2015).
- 10) **Mohamed Ezzat**, Lotfia El Nadi and Yehea Ismail, "Structural and Optical Properties of nano-Silicon Fabricated by Liquid Phase Laser Ablation Method", Oral presentation at Aligarh Nano-IV International 2014, AMU, INDIA.
- 11) Lotfia El Nadi, **Mohamed Ezzat**, I. Marzook, Gamal A .Fattah and Yehea Ismail "Silicon Nano-Crystallites Prepared by Nanosecond Laser Ablation of Si Wafers in Water", Oral presentation Aligarh Nano-IV International 2014, AMU, INDIA.
- 12) **Mohamed Ezzat**, Loftia El Nadi, Magdy Omer, Hussein A. Elmoniem, Galila A. Mehena, A.M. Aboufotouh, Mohamed Ramadan "High Density Laser Induced Thermal Energy for Water Desalination" Poster presented at MTPR-5th International 2014, Cairo University, EGYPT.

## SKILLS

**Experimental:** Ultra intense laser, Mid-IR laser, Shack–Hartmann wavefront sensor, SID4 wavefront sensor, Laser Ablation Technique, Thin Film (PLD, Thermal Evaporation under Vacuum), X-ray diffraction (XRD), High Resolution Transmission Electron Microscope(HRTEM), Electron Diffraction Microscope (ED), Scanning Electron Microscopy (SEM), Energy Dispersive X-ray Spectroscopy (EDS), Photoluminescence Spectroscopy, UV-Vis absorption spectroscopy, Vicker hardness, High vacuum.

**Simulations** LASCAD, MIRÓ, reZonato, Matlab, Origin, Gwyddion, ImagJ, and Revolution.

## Honors/Awards

- **2020-2024:** Chonnam National University Scholarship for pursuing PhD degree at Physics department, Chonnam National University, South Korea.
- **2015:** Thesis Award from National institute of laser enhanced science, Cairo University.
- **2015:** Young Research Award from Topical Society of Laser Sciences (TSLS).
- **2014:** Young Research Award form Arab Union for Sustainable Development & Environment (AUSDE).
- **2014:** Best Poster Award from MTPR-5th International 2014, Cairo University, EGYPT.
- **2014:** Best oral presentation for young scientist, Aligarh Nano-IV International 2014, AMU, INDIA
- **2012-2014:** Cairo University Scholarship for pursuing master degree at National Institute of Laser Enhanced Sciences, Cairo University, Egypt.

#### Memberships/Service/Activities

- Member at American Physical Society (APS).
- Associate member of Topical Society of Laser Sciences (TSLS).
- Member at Korean Physical Society (KPS)
- Member at project High Density Laser Induced Thermal Energy (HD LITE).
- Member at UFLTA organization committee workshop at Cairo University.
- Leadership team member at zewail city friend at Al Qalyubia (2012-2013).
  - Organized volunteering activities events for spread the benefit of science in the community and encourage people to support Research

#### Annexes

- 1) Attended Extremely High Intensity Laser Physics (ExHILP 2023)
- 2) Attended and participated in ELI Summer School 2021
- 3) Attended and participated in ELI-NP 1<sup>st</sup> Summer School at Romania (scholarship).
- 4) Participated in ELI Summer School ELISS 2016 Summer School at Czech Republic (scholarship).
- 5) Attended one-day seminar of Ultra-Fast Laser Technology and Applications at The Urology & Nephrology Center in Mansoura University.
- 6) Attended Fourth International Conference on Laser and Plasma Sciences and Applications at Al Azhar University.
- 7) Attended and participated The Fourth International Workshop on Ultra-Fast Laser Technology and Applications.
- 8) Attended and participated Workshop of Nanotechnology and Devices in Scientific Field from Beni-Suef University.