



Curriculum Vitae for Prof. Walid Tawfik Younes Mohamed

PERSONAL DATA	
Name	Walid Tawfik Younes Mohamed
Date & Place	6 th July 1969, Cairo.
Marital	Married
Home Address	El Mokattam, Ahadaba Amwosta, second district, Building No 3238, Cairo, Egypt.
Present Office address	National Institute of laser enhanced sciences NILES, Cairo University, Gamaa St., P.Code 12613, Giza-Egypt. Cell:+201007869651 walid_tawfik@niles.edu.eg; walid_tawfik@hotmail.com https://www.researchgate.net/profile/Prof_Walid_Tawfik2 linkedin.com/in/walidtafwik
Nationality	Egyptian
Sex	Male
National ID	26907060103392
Present Job	Chairman of Department of Laser Applications in Metrology, Photochemistry and Agriculture (LAMPA), NILES, Cairo University, Egypt.
Publication documents	51
Citation	578
H-index	11 (SCOPUS) world's top 2% scientists in photonics by Stanford Uni. 2021

RESEARCH INTERESTS:

My research plans are devoted to ultrafast optics and photonics. The ultrafast pulses are characterized using autocorrelator, SPIDER, and FROG measurements. The studies include the application of laser-induced breakdown spectroscopy (LIBS) used in the field of analytical spectroscopy and plasma characterization and chemometrics of environmental materials. The spectroscopic characterization and theoretical modeling of graphene nanocomposites is also studied. The applications of laser-induced photothermal treatment of different types of cancer tumors have been investigated recently.



ACADEMIC QUALIFICATIONS

Skills

1- Languages

English Excellent (IELTS 6) German basic level, Arabic (Mother tongue language), French (Basic).

2- PROFESSIONAL EXPERIENCE:

Degree	Institution	Major, Minor	Period
Bachelor	Cairo University, Cairo, Egypt.	Physics	1/9/1987- 15/5/1992
Master	Cairo University, Cairo, Egypt.	Physics, laser physics, The thesis is titled "Laser propagation in water."	1/9/1993 – 15/5/1996
PhD	Cairo University, Egypt (the experiment part and data collection done at TU, Munich, Germany).	Physics, laser physics, dissertation titled "Study of photon molecular interaction dynamics using short laser pulses "ZEKE Spectroscopy"	1/9/1996 – 15/07/2000

period	position	duty
Dec 2020- now	Chairman of Department of Laser Applications in Metrology, Photochemistry and Agriculture (LAMPA), NILES, Cairo University, Egypt.	Chairman of the Board of the Department of Laser Applications in Measurements, Photochemistry and Agriculture, a member of the Graduate Studies Council and a member of the Institute's Council.
May 2017- now	Full Professor– and head of division of metrology laser applications, NILES, Cairo University, Cairo, Egypt.	Coordinate and follow the teaching schedule of all the lectures in this field, teaching atomic physics, laser physics, plasma physics, laser spectroscopy, ultrafast phenomena, and femto-physics for graduate students + supervision of PhD and master students on laser spectroscopy applications studies.
2011 –Sep 2016	Associate Professor, Department of Physics of Physics and Astronomy King Saud University (KSU) , Saudi Arabia.	Teaching physics related subjects for undergraduates and graduate students + supervision of master students + PI of ultrafast laser project
2010 - 2011	Research associate (Associate Prof.) Department of Physics, Pohang University of Science and Technology POSTECH , Pohang, south Korea.	Preform research on self-channeling of gas jets using 10 Hz 30 femtosecond laser pulses.
2008 – 2016	Associate professor –sabbatical leave - at the department of Laser Applications in Metrology, Photochemistry and Agriculture (LAMPA), NILES, Cairo University, Cairo, Egypt.(on sabbatical leave)	Teaching laser physics and laser spectroscopy for graduate students + Supervision of PhD and master students on LIBS applications studies.
2003- 2009	Assistant Prof. - academic staff member at the department of Physics, Faculty of Education for girls, Qurayate, Algouf university, Kingdom of Saudi Arabia.	Teaching physics related subjects for undergraduates students.
2000 - 2003	Lecturer- at the department of Environmental, Photo Chemical and Agriculture Laser applications NILES, Cairo University, Egypt.	Teaching laser physics and laser spectroscopy for graduate students + perform research studies on LIBS applications.



1999 - 2000	Assistant Lecturer- at the department of Environmental Photo Chemical and Agriculture Laser applications, NILES, Cairo University, Cairo, Egypt.	Teaching experimental laser physics for graduate students.
1996 - 1999	Physics Specialist- at the department of Environmental Photo Chemical and Agriculture Laser applications, NILES, Cairo University, Cairo, Egypt.	Maintenance laser equipment + teaching experimental laser physics for graduate students.

Scientific collaborations

period	group	mission
(2015) June- August	visiting professor at professor Rick Trebino group for ultrafast lasers, School of physics, Georgia Institute of Technology, University, Atlanta, Georgia USA.	Study nonlinear propagation of ultrafast pulses in nonlinear media and stablish simulations of FROG for 4 fs laser pulses during summer.
(2014) July- August	Visiting Scientist at Takayoshi Kobayashi Lab.(University of Electro-Communications, Tokyo, Japan).	study photochromic molecule using developed ultrafast NOPA system.
(2014) April	short visiting scientist at prof. Noureddine Melikechi (Delaware State University, Dover, DE 19901, USA).	initiation of collaboration in femtosecond - LIBS biomedical applications.
(2012) June - July	visiting scientist at prof. Ferenc Krausz Group at Max-Planck-Institut fuer Quantenoptik (Garching, Germany).	Setup and preparation of an attosecond beamline at max-planck to be transferred to KSU.

Teaching Experience:

Undergraduate courses		
	PHYS 331	Physical optics
	PHYS 335	laser physics and its application
	PHYS103	general physics (1)
	PHYS 499	project research
	PHYS 325	Electronics
	PHYS 301	mathematical physics
	PHYS104	general physics (2)
	PHYS105	general physics for architecture
	PHYS111	general physics
	PHYS102	general physics
	PHYS145	general physics
Postgraduate courses		
	PHYS 535	atomic spectroscopy for master degree students
	PHYS 632	ultrafast Phenomena for PhD students
	PHYS 539	Laser Spectroscopy
	PHYS 600	supervision of an M.SC. thesis
	LAM 601	Laser physics II
	LAM 605	Plasma Physics



ACTIVITES

1- Projects:

- 1-1 Principal Investigator PI, for a project No. 37051 with a budget of 10 million Egyptian pounds funded by the STDF at the Academy of Scientific Research, which is being implemented starting from 15-8-2020 at Cairo University with the title - Accurate and rapid detection of soil contamination using laser breakdown spectroscopy using femtoseconds and LA -ICP-MS (Induction-coupled plasma mass spectrometry). During the project, a research team is led to purchase the necessary equipment and tools and install them in the appropriate time plan. In addition, the lab has been prepared for the ideal conditions for the project in terms of pressure, humidity and temperature. Also, the database for heavy element lines is being prepared using modified data analysis programs. And a plan has been drawn up to publish the results expected to be obtained in peer-reviewed journals and present them at international conferences.
- 1-2 CO-principal Investigator Co-PI, for a project Egy-USA joint STDF 45893 with a budget of 3.3 million Egyptian pounds funded by the STDF at the Academy of Scientific Research. This project started in April 2022 and till April 2025 at Cairo University with the title - Photoactive biocompatible carbon-based nanocomposites for theranostic nanomedicine. The GO-FA-TMDs will be used for cancer treatment using NIR LASER in this project.
- 1-3 Principal Investigator PI, for a project No. 36992 Egyptian pounds funded by the STDF at the Academy of Scientific Research, which is being implemented starting from Feb 2019 at Cairo University with the title - Accurate and rapid detection of soil contamination using laser breakdown spectroscopy using femtoseconds and LA -ICP-MS (Induction-coupled plasma mass spectrometry).
- 1-4 Principal Investigator PI, NSTP (National Science and Technology Plan) Riyadh, Saudi Arabia, project # 12-ELE2628-02 characterization of ultrafast white laser light generated via supercontinuum in a hollow-fiber waveguide, (Sep/2013 to Sep/2015) working as principal investigator successfully applied and secured 500 K\$ budget for the project. I have led my team to procure and install the needed equipment in the proper time plan. Experimental conditions have been optimized for better ultrafast pulses, and the data acquired data using the adapted software for data analysis. The obtained results have been published in refereed journals, conference proceedings, and project reports. The final evaluation for the project report by the American Association for the Advancement of Science (AAAS) with excellent marks has been obtained.



2- Inventions and Patents

2-1 Walid Tawfik, and Lotfia Elnadi, Generation of ultrafast high intensity pulsed Laser Solar Simulator Reg. # 2017/10 submitted on 1st Jan, 2017.

This patent demonstrates a new laser technology, the ultrafast supercontinuum laser, these broadband spectral light pulses are used to produce a high power ultrafast controllable laser solar simulator. The prospective application of the obtained light is to be used in ultrafast laser texturing for enhanced solar cell performance.

Professional Associations

- Senior member, Institute of Electrical and Electronics Engineering (IEEE), USA. ID#: 939832
- Senior member, The Optical Society of America (OSA), USA.# 92638495
- Member, The American Physical Society (APS), USA.# 61218544
- Member, Society of Photo-Optical Instrumentation Engineers SPIE (Photonics Society) USA. # 3581083
- Member, European Society of Photobiology, Italy.
- Member, Saudi Physical Society, SPA, KSA.
- Member, The Egyptian Materials Research Society, Egypt.

3- Peer-review activities

1- [Journal of Spectroscopy Letters](#).

2- [Journal laser physics](#).

3- [International journal of physical science](#)

4- [Journal of physical chemistry](#)

5- [AIP \(American Institute of physics\) Conference Proceedings](#)



6- PUBLICATIONS

I - BOOKS:

1. **Walid Tawfik Mohamed** and Jungkwuen An, and Dong Eon Kim, 2012, "Generation of Few Cycle Femtosecond Pulses via Supercontinuum in a Gas-Filled Hollow-Core Fiber" published as a chapter in book "Optical Fibers/ Book 4 InTech , Croatia, [ISBN979-953-307-653-8](#).
2. **Walid Tawfik Y. Mohamed** and Mahmoud Abdel-Aty (Editor), 2007, "Recent advances in laser induced breakdown spectroscopy as elemental analytical technique for environmental applications and space exploration" book titled "Aspects of Optical Sciences and Quantum Information", Research Signpost 37/661 (2), Fort P.O., Trivandrum-695 023, Kerala, India, [ISBN: 81-308-0147-7](#).

II - PAPERS:

- [1] Elsayed, Khaled, Walid Tawfik, Ashraf EM Khater, Tarek S. Kayed, and Mohamed Fikry. "Fast determination of phosphorus concentration in phosphogypsum waste using calibration-free LIBS in air and helium." *Optical and Quantum Electronics* 54, no. 2 (2022): 1-14.
- [2] Noura Fayek, Walid Tawfik, Ahmed Khalafallah, Sawsan Hamed and Wafaa Mousa, "Spectroscopic study of Cu, Mn, Cd as heavy metals in agricultural samples", [IOP Conf. Ser.: Mater. Sci. Eng. 1171 012001 2021](#).
- [3] Shaheen, Mohamed E., Walid Tawfik, Asmaa F. Mankoula, Joel E. Gagnon, Brian J. Fryer, and Farouk El-Mekawy. "Determination of heavy metal content and pollution indices in the agricultural soils using laser ablation inductively coupled plasma mass spectrometry." [Environmental Science and Pollution Research \(2021\): 1-14](#).



- [4] Gamal, Hend, Walid Tawfik, Heba Mohamed Fahmy, and Hassan H. El-Sayyad. "Breakthroughs of using Photodynamic Therapy and Gold Nanoparticles in Cancer Treatment." [IEEE Xplore, IEEE International Conference on Nanoelectronics, Nanophotonics, Nanomaterials, Nanobioscience & Nanotechnology \(5NANO\), pp. 1-4. IEEE, 2021.](#)
- [5] Mankoula, Asmaa F., Walid Tawfik, Joel E. Gagnon, Brian J. Fryer, F. El-Mekawy, and Mohamed E. Shaheen. "ICMMS-2: Assessment of Heavy Metals Content in The Agricultural Soils of Kafr El-Zayat Egypt Using Laser Ablation Inductively Coupled Plasma Mass Spectrometry and Inductively Coupled Plasma Optical Emission Spectroscopy." [Egyptian Journal of Chemistry 64, no. 3 \(2021\): 7-8.](#)
- [6] Fikry, Mohamed, Walid Tawfik, and Magdy M. Omar. "Controlling the plasma electron number density of copper metal using NIR picosecond laser-induced plasma spectroscopy." *Optica Applicata* 51 (3) 2021.
- [7] Fikry, Mohamed, Walid Tawfik, and Magdy Omar. "Measurement of the Electron Temperature in a Metallic Copper Using Ultrafast Laser-Induced Breakdown Spectroscopy." *Journal of Russian Laser Research* 41, [no. 5 \(2020\): 484-490.](#)
- [8] Menazea, Abdelrhman A., Hend A. Ezzat, Wessam Omara, Osama H. Basyouni, Samah A. Ibrahim, Aya A. Mohamed, Walid Tawfik, and Medhat A. Ibrahim. "Chitosan/graphene oxide composite as an effective removal of Ni, Cu, As, Cd and Pb from wastewater." *Computational and Theoretical Chemistry* [1189 \(2020\): 112980.](#)
- [9] Ezzat, Hend, A. A. Menazea, Wessam Omara, Osama H. Basyouni, Samah A. Helmy, Aya A. Mohamed, Walid Tawfik, and Medhat Ibrahim. "DFT: B3LYP/LANL2DZ Study for the Removal of Fe, Ni, Cu, As, Cd and Pb with Chitosan." *Biointerface Res. Appl. Chem* 10 (2020): 7002-7010.
- [10] Fikry, Mohamed, Walid Tawfik, and Magdy M. Omar. "Investigation on the effects of laser parameters on the plasma profile of copper using picosecond laser induced plasma spectroscopy." *Optical and Quantum Electronics* [52 \(2020\): 249.](#)



- [11] Omnia Hamdy and Walid Tawfik, The Effect of Temperature on the Optical and Analytical Properties of PET Polymer Used in Drinking Water Bottles, (2020) *J. Phys Conf. Ser.* [1472 012004](#)
- [12] Ahmed, Nasar, Usman Liaqat, M. Rafique, M. Aslam Baig, and Walid Tawfik. "Detection of toxicity in some oral antidiabetic drugs using LIBS and LA-TOF-MS." *Microchemical Journal* 155 (2020): [104679](#).
- [13] Farooq, W. A., Awatef S. Al-Johani, M. S. Alsalhi, Walid Tawfik, and Rabia Qindeel. "Analysis of polystyrene and polycarbonate used in manufacturing of water and food containers using laser induced breakdown spectroscopy." *Journal of Molecular Structure* (2020), [1201](#), [127152](#).
- [14] Arkadiusz Jarota, Ewa Pastorzak, Walid Tawfik, Bing Xue, Rafał Kania, Halina Abramczyk and Takayoshi Kobayashi "Exploring ultrafast dynamics of diarylethene derivative by sub-10 fs laser pulses " *Phys. Chem. Chem. Phys.*, 2019,21, [192-204](#) ; DOI [10.1039/C8CP05882B](#)
- [15] Farooq, W. A., Walid Tawfik, M. Atif, M. S. Alsalhi, H. Y. Zahran, AF Abd El-Rehim, I. S. Yahia, and Sarfraz Mansoor. "Evaluation of laser Induced Breakdown Spectroscopy for analysis of annealed Aluminum Germanium alloy at different temperatures." *IOP Conference Series: Materials Science and Engineering*, vol. 383, no. 1, p. 012012. IOP Publishing, 2018.
- [16] **Tawfik, Walid** "Reaching white-light radiation source of ultrafast laser pulses with tunable peak power using nonlinear self-phase modulation in neon gas." *Radiation Physics and Chemistry* [125](#) (2016): [165-170](#).
- [17] **Tawfik, Walid** "Precise measurement of ultrafast laser pulses using spectral phase interferometry for direct electric-field reconstruction." *Journal of Nonlinear Optical Physics & Materials* [24.04](#) (2015): [1550040](#).
- [18] **Tawfik, Walid** "High-power table-top white-light few-cycle laser generator." *Ukr. J. Phys. Opt* [16.3](#) (2015): [111](#).



- [19] **Tawfik, Walid** "A method for controlling the bandwidth of high-energy, few-optical-cycle laser pulses tunable from the visible to the near-infrared." [Ukr. J. Phys. Opt 16.4 \(2015\): 147.](#)
- [20] **Walid Tawfik**, "Creation of Transform-Limited 120 GW Optical Pulses using Broadband Supercontinuum Generation in Optical Fiber", [Journal of Optoelectronics and Advanced Materials 18.3-4 \(2016\): 201 – 206.](#)
- [21] **Walid Tawfik**, "Optimizing the optical throughput of a neon-filled hollow-core fiber for ultra-broadband sub-5 fs pulses", [Journal of Optoelectronics and Advanced Materials 18.3-4 \(2016\): 213 – 219.](#)
- [22] **Walid Tawfik**, "Tuning the pulse duration of high intensity ultrafast laser pulses," [Indian Journal of Natural Sciences 5, 30, \(2015\).](#)
- [23] W. A. Farooq , **Walid Tawfik**, Saad Bin Qasimc, A. S. Aldwayyana , M. Atif, "Application of Laser Induced Breakdown Spectroscopy in early detection of red palm weevil: (Rhynchophorus ferrugineus) infestation in date palm" [Plasma Sci. Technol. 2015, 17 \(8\): 850-863.](#)
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- [30] **Walid Tawfik** and Sausan Sawaf " Approaching the ppb detection limits for copper in water using laser induced breakdown spectroscopy ", Proc. SPIE 9101, Next-Generation Spectroscopic Technologies VII, 91010L (May 21, 2014); [doi:10.1117/12.2053957](https://doi.org/10.1117/12.2053957)
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- [34] S. SAWAF, **WALID TAWFIK**, “Analysis of heavy elements in water with high sensitivity using laser induced breakdown spectroscopy”, [optoelectronics and adv. materials – R. comm. , 8, 5-6, \(2014\), 414 – 417.](#)



- [35] **Walid Tawfik**, W Aslam Farooq, and Z. A. Alahmed, “Damage Profile of HDPE Polymer using Laser-Induced Plasma”, [J. Opt. Soc. Korea 18, 50-54 \(2014\)](#).
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- [41] **Walid Tawfik**, W Aslam Farooq, Zeyad A. Alahmed, M Sarfraz and Fahrettin Yakuphanoglu “Characterization and Analysis of Nanostructured CdO Thin Film using LIBS Technique” [IEEEExplore, Electronics, Communications and Photonics Conference \(SIECPC\), 2013 Saudi International](#).



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- [43] **Walid Tawfik Mohamed**, Guanglong Chen, Jaehoon Kim, Geng Xiao Tao¹, Jungkwen Ahn and Dong Eon Kim "Controlling the length of plasma waveguide up to 5 mm, produced by femtosecond laser pulses in atomic clustered gas", [Optics Express 2011, 19\(17\)15919-15928.](#)
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- [45] **Walid Tawfik Younes Mohamed**, 2007, "Calibration Free LIBS Identification Of seawater Salinity", [Optica Applicata Vol. 37, No. 1, 5-19.](#)
- [46] **Walid Tawfik Y. Mohamed**, 2007, "Fast LIBS Identification of Aluminum Alloys", [Progress in Physics, Vol. 2, pp. 87-92.](#)
- [47] **Walid Tawfik Y. Mohamed** and Abeer Askar, 2007, "study of the matrix effect on the plasma characterization of heavy elements in soil sediments using LIBS with a portable Echelle spectrometer", [Progress in Physics, Vol. 1, pp. 47-53.](#)
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[Applied Physics, vol. 2, No.1, pp. 11-21.](#)

- [51] **Walid Tawfik**, Magdy M. Omar, Yoser E. Gamal and Lotfia El Nadi , **2005**, " Ultrafast moving bubbles of focused laser pulsed in water", [American Institute of Physics AIP conference proceedings, vol. 748, pp. 280-288.](#)
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- [55] **WALIED TAWFIK**, MAGDY M. OMARA, YOSR E. GAMAL and L. EL – NADI , (**1995**) , " Bulk and surface effects in liquids due to interaction of high power pulsed laser beams ", [Proceeding of Femtochemistry: The Lausanna Conference Sept. 4 –8 Lausanne Switzerland, page 483-490. World scientific.](#)