

Curriculum Vitae

Diaa A. M. KHALIL

Professor in the ECE (Electronic and Communication Engineering) Department in the Faculty of Engineering, Ain Shams University (ASU) Cairo, Egypt.

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Prof. Diaa Khalil has over 35 years of experience in micro photonics systems, including integrated optoelectronics and optical MEMS technology. He obtained his PhD from INPG France in 1993.

Diaa Khalil is a Professor of photonics in the Faculty of Eng., Ain Shams University since 2004. In 2015 He was the Head of the ECE Dept., and in 2017 He became the Vice dean of Research and Post Graduate. From 2019 to Feb. 2021, he was the Acting dean of the School of Engineering. He introduced the courses of Integrated Optics, Optical MEMS, and Applied Optical Engineering for the post-graduate engineering students. He is also leading a group of scientists working in the field of Photonic microsystems. He supervised more than 80 MSc and PhD thesis in the fields of: Optics, Optoelectronics, Applied Spectroscopy, Optical MEMS and integrated Optics.

Diaa Khalil was also the CTO of the Optical MEMS Division in Si-Ware Systems from 2007 - 2020, leading a group of talented engineers developing an innovative FTIR MEMS spectrometer, a unique product that gained the Prism award in the Photonics West conference 2014 in SF USA. Prior to joining SWS, he worked with MEMScAP company as the head of the optical MEMS design group where he led the design and characterization of a 2×2 switch, and introduced a novel VOA (variable Optical Attenuator) achieving the world record of minimum PDL reported for wide dynamic range.

Prof. Diaa Khalil is a holder of the Egyptian state incentive prize in engineering sciences in 1998, and the Egyptian State appreciation prize in Engineering science in 2021. He is a senior member in the OSA, the SPIE, the IEEE Photonic Society, and URSI. He is currently the head of commission D in the National URSI committee, in Egypt.

He is also a member in the editorial board of the journal, "Light: Science and Applications - **Nature** Publishing Group NPG. He is inventor of about 20 granted international patents and more than 10 other patent applications. He is author and co-author of more than 340 publications, in international journals and conferences, in addition to 4 book chapters and 1 ebook published by SPIE.

2- Personal Data:

Name:	Diaa Abdel Maguid Mohamed KHALIL	diaa.khalil@gmail.com
Date and place of birth:	8 September 1961 at Cairo [EGYPT]	
Marital status:	Married, has one child	
Nationality:	Egyptian	
Languages:	Arabic - English - French	
Home address:	5 Al-Ahlam St., Nasr city, Cairo, Egypt.	Tel: (202) 226 20 822

3- Fields of interest:

Optical MEMS - Integrated Optics – RF Photonics – Hybrid fiber/SOA laser systems.

4- Academic Degrees:

1993	Ph. D. from INPG (Institut National Polytechnique de Grenoble) France, in Integrated Optics, with a grade "Très honorable avec les félicitations des jurys"
1989	D.E.A. (Diplôme d'études approfondis) from INPG, France, in: Optics, Optoelectronics and Microwaves.
1988	M.Sc. of Electrical Engineering from ASU, Cairo-Egypt, Department of Electronics and Comm.

1984 B.Sc. of Electrical Engineering from ASU, Cairo-Egypt, Department of Electronics and Comm. with grade **Distinction** with honor degree (96.42%), class order: the first out of 99 students, B.Sc.

5– Academic Experience:

From 2021 Chief Advisor of the iHub – Supervisor of all the innovation and entrepreneurship activities in ASU

2019-2021 Acting Dean for the Faculty of Engineering, ASU

2017 -2020 Vice Dean for Post Graduate and Research Affairs in the faculty of Eng. ASU

2015 - 2017 Head of the ECE Dept., Faculty of Eng., Ain Shams University.

From 2004 Professor at ASU, Faculty of Eng., ECE Dept, Cairo Egypt.

2004-2008 Responsible of the optoelectronic and optical communication courses at the Université Française en Egypte UFE.

1998-2004 Associate Professor at Ain Shams University, Faculty of Engineering, ECE. Dept. , ASU.

1998 /2000 Invited assistant professor at the Institut National Polytechnique de Grenoble INPG.

1997 Visiting Professor for one semester at the United Arab Emirates University, UAE.

1993 -1998 Assistant Professor at ASU, Faculty of Eng., ECE Dept.,Cairo Egypt.

1984-1988 Teaching assistant at Ain Shams University, Faculty of Eng., ECE Dept.

Participation in the following Higher Education projects:

Period	Role	Project Title	Financial Support	Location
2022 - 2025	Egyptian PI	Innovative Solutions for Industry 4.0 in Egypt	DAAD	ASU - iHub
2004-2006	Assistant Manager	Optical Communications and Optoelectronics Engineering Technology Education and consultation facility OCETEC	HEEPF Grant B-040-G0	ASU/FE Laser Lab.
1996-1997	Monitor	International Bank project for the enhancement of Engineering Education in Egypt	International Bank Loan	ASU/FE Laser Lab.
1994 -1995	Member of the management team	NATOP, Network for Advanced training in Optoelectronic,	Med Campus Program / EC	ASU/FE Laser Lab.

6 –Research Experience:

From 2004 Leading a group of researcher at ASU working in the following directions

- Design, fabrication and characterization of passive integrated optical IO circuits.
- Optical MEMS development on Si / SOI wafers in cooperation with ESIEE, France.
- RF Photonic applications

2000/2004 Working as an R and D manager for the optical MEMS design group in the company MEMScAP.

1998/2000 Invited researcher at the LCIS (Laboratoire de Conception et d'Intégration des Systèmes) – INPG, France. Involved in:

- 1- Modeling and design of integrated optical nanostructures based on photonic crystals.
- 2- Development of CAD tools for optical communication systems using a standard simulator.

1994

- **Post Doc.** Of two months. at LEMO-INPG, France, in the field of "Optical microwave interactions".
- **Post Doc.** of two months at Glasgow University in the field of "Quantum Well intermixing for optoelectronic integration".

- Supervisor of more than 80 M. Sc. and PhD thesis defended in the fields of: Integrated Optics, Optical MEMS, RF Photonics, Quantum well lasers and modulators, RET in Optical lithography, and Optical gyroscopes. The list of his PG students include:

In the Academia:

1. Prof. Amr Ezzat Safwat, Head of the ECE Dept., Faculty of Eng. Ain Shams University ASU, Egypt.
2. Prof. Mohamed Swillam, Head of Photonic Group, AUC, Cairo, Egypt
3. Dr. Salwa Mohsen Al Taweel, Assistant Prof., Faculty of Eng. Ain Shams University ASU, Egypt.
4. Dr. Marwa Magdy Ragheb, Assistant Prof, Faculty of Eng. Ain Shams University ASU, Egypt
5. Dr. Ismail Nassar, Associate Prof, Faculty of Eng. Ain Shams University ASU, Egypt

6. Dr. Mohamed Nabil, Assistant Prof, Faculty of Eng. Ain Shams University ASU, Egypt.
7. Dr. Hatem Al Refai, Associate Prof. Faculty of Eng. Ain Shams University ASU, Egypt
8. Dr. Ismail Nassar, Associate Prof. Faculty of Eng. Ain Shams University ASU, Egypt
9. Dr. Michael Monir, Associate Prof., Faculty of Eng., Ain Shams University ASU, Egypt
10. Dr. Hussien Aissa Kotb, Assistant Prof., Faculty of Eng. ASU, Egypt.
11. Dr. Mazen Erfan, Assistant Prof., Faculty of Eng., ASU, Egypt.
12. Dr. Alaa Fathy Rizk, Assistant Prof., Faculty of Engineering, ASU. Egypt.
13. Dr. Mohamed Nabil Ali, Assistant Prof., Faculty of Eng. ASU, Egypt
14. Dr. Tarek Al Saeed, Associate Prof. Helwan University.
15. Dr. Ahmed Mohamed Abdel Aleem, Assistant Prof., Electronic Research Institute, Egypt.
16. Dr. Heba Ahmed Shaky, National Telecommunication Institute, Egypt
17. Dr. Hiatham Omran, Assistant Prof., Faculty of Engineering, GUC, Egypt.
18. Dr. Mostafa Soliman, Assistant Prof., Electronic Research Institute, Cairo Egypt.
19. Dr. Noha A. Gaber, Zwail City for Science and Technology, Egypt.
20. Dr. Amr Wageeh, Assistant Prof., Faculty of Engineering, Helwan University.

In the Industry

21. Dr. Bassam A. Saadany, CTO of Si-Ware Systems Company, Egypt.
22. Dr. Kareem Madkour, Mentor Graphics, Siemens, Egypt
23. Dr. Tamer Al Azhary, Optical scientist at Facebook, USA.
24. Dr. Mohamed Abdel Hakeem, Intel Corp., USA
25. Dr. Muhamed Abdel Raouf Othman, Orange Company.
26. Dr. George Ishak Aziz, JDSU Company, USA.
27. Dr. Maurin Malak, EPFL, Switzerland.
28. Eng. Mostafa Medhat, Marketing Manager, Si-Ware Systems Company, Egypt.
29. Dr. Kamal Khalil, Integrated mmWave-Photonics researcher at Keysight company
30. Dr. Ayman Yehia, Principal Engineer at ASML.
31.etc.

- **Research projects:**

Period	Role	Project Title	Financial Support	Host
2021/ 2023	Principle investigator	Wide Band Tunable MEMS Based Semiconductor Quantum Dot Swept Laser for Gas sensing Applications	STDF / STIFA (GERF Project4)	ASU + GUC + Stuttgart U.
2020/2021	Photonic Chief Scientist	Fast and low-cost method of viral infection detection using micro FTIR spectrometer and artificial intelligence technology	ASRT - Egypt	Si-Ware Systems Company
2017/2018	Academic PI	Micro Spectral Sensor for high volume applications	ASRT - Egypt	SWS ASU
2014/2016	Principle Investigator	MEMS IR Gas Sensor	RDI Program, EU-Egypt Innovation fund	SWS + ASU + ESIEE
2012/2014	Principle Investigator	MEMS Based Ring Laser Gyroscope	KACST + SWS	SWS
2014	Principle Investigator	Ring Laser with MEMS Phase Modulation	SWS	ASU + SWS
2012/ 2013	Principle Investigator	MEMS Based Optical coherence Tomography OCT Module	ITIDA – ITAC Program + NTRA	SWS + ASU /FE
2009/2010	Principle Investigator	Integrated High Resolution Optical MEMS Spectrometer	RDI Program, EU-Egypt Innovation fund	SWS + ASU + ESIEE

2008/2009	Principle Investigator	Miniaturized MEMS Spectrometer	ITIDA –ITAC PDP Program Ministry of Comm. Egypt	ASU/FE +SWS
2008/2009	Researcher	Optical Fiber sensor applications	Egyptian Government	ASU/FE
2006/2008	Principle Investigator	Optical Add Drop Multiplexer OADM for CWDM systems	-Ottawa University -Ain Shams University	ASU/FE Laser Lab.
2006/2008	Researcher	FM Response of Quantum well lasers	-Ain Shams University	ASU
2005/2006	Principle Investigator	Characterization of an IR Laser transmitter for a MILE system	Si-Ware Systems Company (SWS)	ASU/FE Laser Lab.
2001/2003	Principal Investigator	Strongly asymmetric vertical Multimode Interference MMI Structure	Third world academy of science TWAS / ICTP	ASU/FE Laser Lab.
2000/2001	Principal Investigator	Assembly and Packaging of micro-opto-electro-mechanical systems MOEMS	-MEMScAP Egypt -Ain Shams University ASU	ASU/FE Laser Lab.
1998/2000	Researcher	Nano-structures a base de cristaux photoniques 1D et 2D pour circuits intègres photoniques	Region Rhone Alpes /France	INPG - LCIS
1998/1999	Researcher	Ionic Exchange on glass for integrated optics fabrication	- Ain Shams University	ASU/FE Laser Lab.
1996/1997	Principal Investigator	Radiation mode effects in integrated optical structures	Third world academy of science TWAS / ICTP	ASU/FE Laser Lab.

7 –Science Dissemination Activities:

- From 2017, member in the editorial board of the international journal “Light: science and Applications” produced by the **Nature** Publishing Group.
<https://www.nature.com/lsa/about/editorial-board>.
- From 2022, associate Editor in the Journal IEEE, Journal of Photonic Technology Letters.
- Since 2019, Member in the Scientific Program committee of the conference MOEMS and Miniaturized Systems XVIII, part of the Photonics West, SPIE Conference, held annually in SF, USA.
<https://spie.org/pwo/conferencedetails/moems-miniaturized-systems?SSO=1>
- Member in the Scientific committee of the “Light Conference 2018”, the international conference held in China, organized by Changchun Institute of Optics, Fine Mechanics and Physics (CIOMP), Chinese Academy of Sciences (CAS), National Natural Science Foundation of China (NSFC), China Association for Science and Technology (CAST) in July 2018.
- From October 2004 to April 2008, Editorial Manager of the Scientific Bulletin of the Faculty of Engineering, Ain Shams University, and from 2017 to 2021 head of the editorial Board of the same journal.
<https://www.journals.elsevier.com/ain-shams-engineering-journal/editorial-board>
- From 2013 to 2021, member in the scientific committee of the national radio science NRSC conference held annually in Egypt.
- Member in the advisory board of the “Journal of Engineering Science and Computing JESC”, administered and published by the Islamic University of Madinah, Saudi Arabia. [The Islamic University Journal of Applied Sciences \(iu.edu.sa\)](http://www.iu.edu.sa)
- Member in the Scientific Committee of the International Conference on Nano Technology Theory and Applications”, Cairo, Egypt, the first was in Dec. 2018, the second is scheduled for Dec. 2022.
- Member in the scientific committee of the The International Japan-Africa Conference on Electronics, Communications and Computations, (JAC-ECC), held annually in Alexandria, Egypt.
- Reviewer for many international journals as, Light Science and Applications (Nature Publishing Group), IEEE- PTL, IEEE-JLT, Optical Engineering, Applied Physics letters, Applied Optics, Chinese Optics letters, Modern Optics ...etc.

8– Activities in Professional Societies:

Member in the following professional societies:

- The Optical Society of America OSA (**Senior Member**).
- The Institute of Electrical and Electronic Eng. IEEE, Photonics Society (**Senior Member**)
- The International Society for Optical Engineering SPIE (**Senior Member**).
- The international Union of Radio Science URSI (**Senior member**).

- The ITU (International Telecommunication Union) committee, in the Egyptian Academy of Scientific Research and Technology ASRT, 2015 – 2018.
- From 2009-2012, in the Council of Engineering Sciences in the Egyptian ASRT. .
- From 2013, member in the National Radio Science Committee in Egypt, in the ASRT and head of commission D (Electronics and Photonics).
- Member in the Scientific Committee for the Electronics, Communications, and biomedical Engineering in Egypt in 2019-2020. This is a committee formed by 6-10 members of highly ranked professors selected based on their scientific contributions for the judgment of all the scientific work to be presented in this sector in Egypt.
- From 2020, Member in the Scientific Specialized Engineering Committee in Egypt. This is a highly prestigious, and precisely selected scientific committee for the judgment of the scientific works in the Egyptian academia on all levels. The committee is formed from 7 members for the Engineering sector in Egypt.
- From 2018, member in the scientific committee for the National Telecommunications Institute NTI affiliated to the Ministry of Communications and Information Technology in Egypt <https://www.nti.sci.eg/> .
- From 2020, member in the scientific committee for the Engineering sciences in the Egyptian Atomic Energy Authority EAEA. <https://eaea.org.eg/>
- The Egyptian Engineers Syndicate.

9– Awards and prizes:

- **State Appreciation Prize** in engineering science in 2021 in Egypt. This is a very prestigious prize, , only one prize to be awarded per year for one nominated scientist out of all the applicants in Egypt.
- ***Egyptian state incentive prize in the engineering sciences in 1998.***
- ***Listed in Stanford list for the top 2% scientists all over the world in Optics and optoelectronics.***
- ***Prism award*** for best optical component products in the Photonics West 2014 conference.
- ***Innovation Award in the Information and communication Technology ICT in Egypt 2011.***
- Young Scientist award in the URSI conference, Lille France 1996.
- 35th National Radio Science Conference NRSC, Cairo, Egypt, March 2018 (**Best Paper Award**).
- 34th National Radio Science Conference NRSC, Alexandria, Egypt, April 2017 (**Best paper award**).
- 33rd National Radio Science Conference NRSC, Aswan, Egypt, February 2016 (**Best Paper Award**).
- 32nd National Radio Science Conference NRSC, Cairo, Egypt 2015 (**Best Student Paper Award**).
- 31th National Radio Science Conference NRSC, Cairo Egypt 2014 (**Best Paper Award**)
- OSA-IEEE Advances in Optoelectronics and Micro/Nano optics AOM 2010, Guangzhou, China, 3-6 December, 2010. (**Best student paper award**).
- SPIE Advanced Lithography 2009 San Jose, California, USA 22-27 February 2009. [**Best student paper award**]
- SPIE Photonics West, San Francisco, USA, February 2013 [**Best student paper award**].
- Egyptian award of excellence from 1979 to 1984 in the Faculty of Eng./ASU.
- Selected as a **senior member** in IEEE-LEOS society in 2006.
- Selected as Optical Society of America OSA **senior member** in 2011.
- Holder of the **SPIE** educational grant in 2007.
- Selected as a **senior member** in SPIE society in 2016.
- Selected as one of the pioneers in the field of engineering by the Marquise **Who's Who** in Science and Engineering, in its 10th Anniversary Edition in 2007.
- Selected as a member in the higher committee for the promotion of the faculty members in the specialization of Electronics, Communication and Biomedical Engineering in Egypt in 2019.
- Selected as a member in the advisory Board and head of the research and policy committee in the Center of Excellence established between Ain Shams University and the Massachusetts Institute of Technology MIT in 2019 - 2020.

10 – Publications:

Total No. of publications > 350

Google Scholar Metrics:

<https://scholar.google.com/citations?hl=en&user=cTXs7S8AAAAJ#>

Citations	2849
h-index	26
i10-index	97

Scopus Metrics:

<https://www.scopus.com/authid/detail.uri?authorId=7003898118>

Citations	2055
h-index	22

Web of Science

Citations	1760
h-index	20

Journal	Publisher	IF in WoS	Documents	
Light Science And Applications	Nature PG	20.257	1	20.257
Microsystems And Nanoengineering	Nature PG	7.127	2	14.254
Scientific Reports	Nature PG	4.996	2	9.992
Laser And Photonics Reviews	Wiley-VCH	13.138	2	26.276
Advanced Materials Technologies	Wiley-VCH	8.856	3	26.568
Microwave And Optical Technology Letters	Wiley	1.392	3	4.176
IEEE Journal Of Selected Topics In Quantum Electronics	IEEE	4.653	9	41.877
Journal Of Lightwave Technology	IEEE / OSA	4.142	11	45.562
IEEE Journal Of Quantum Electronics	IEEE	2.52	7	17.64
IEEE Photonics Technology Letters	IEEE	2.414	7	16.898
IEEE Transactions On Microwave Theory And Techniques	IEEE	4.381	4	17.524
IEEE Photonics Journal	IEEE	2.25	1	2.25
Journal Of Microelectromechanical Systems	IEEE	2.829	1	2.829
Optical And Quantum Electronics	Springer	2.794	7	19.558
Microsystem Technologies	Springer	2.012	2	4.024
Annales Des Telecommunications	Springer	1.91	1	1
Journal Of The Optical Society Of America B	OSA	2.058	2	4.116
Optics Express	OSA	3.833	4	15.332
Applied Optics	OSA	1.905	24	45.72
Optics Letters	OSA	3.56	1	3.56
OSA Continuum	OSA	1.4	3	4.2
Applied Spectroscopy	OSA	3.588	2	7.176
Journal of Micro Nanolithography MEMS And Moems	SPIE	1.22	3	3.66
Optical Engineering	SPIE	1.084	6	6.504
Optics Communications	Elsevier	2.335	4	9.34
Optik	Elsevier	2.84	2	5.68
Microelectronic Engineering	Elsevier	2.662	1	2.662

Optics And Lasers In Engineering	Elsevier	5.666	1	5.666
Chemometrics And Intelligent Laboratory Systems	Elsevier	4.175	1	4.175
IEE Proceedings Optoelectronics	IEE	1.636	1	1.636
Journal Of Optics A Pure And Applied Optics	IOP Science	2.077	6	12.462
Journal Of Physics D Applied Physics	IOP science	3.409	1	3.409
Micromachines	MDPI	3.523	3	10.569
Sensors Switzerland	MDPI	3.847	1	3.847
Fiber And Integrated Optics	Tylor & Francis	0.976	2	1.952
International Journal Of Geomate	GEMAT Sc.	0.804	1	0.804
Total			132	423.155

Details of Publications:

I- Books and Book Chapters

a. Book:

1. Mazen Erfan; Yasser M. Sabry; Marwa M. Ragheb; and **Diaa Khalil**, "Optical Gas Sensing Based on MEMS FTIR Spectrometers", SPIE Publisher, 2017.

b. Chapters in Books

1. Bassem Mortada, Yasser M. Sabry, **Diaa Khalil**, Tarik Bourouina, "Miniature Infrared Spectral Sensing Solutions for Ubiquitous Analytical Chemistry, Chapter 13 in, " Green Chemical Analysis and Sample Preparations: Procedures, Instrumentation, Data Metrics, and Sustainability" edited by: Mahmoud H. El-Maghrabey V. Sivasankar and Rania N. El-Shaheny, pp 513-536, Springer Nature, 2022, <https://doi.org/10.1007/978-3-030-96534-1>
2. John O. Gerguis, Yasser M. Sabry, Haitham Omran, and **Diaa Khalil**, "MEMS Based Swept laser source", Chapter 46 in, "Handbook of laser Technology and Applications" edited by , Chunlei Guo, CRC Press, Taylor and Francis Group, June 2021.
3. Yasser M. Sabry, **Diaa Khalil**, Bassam Saadany and Tarik Bourouina, "In-Plane Optical Beam Collimation Using a Three-Dimensional Curved MEMS Mirror", in "MEMS Mirrors", editor: Huikai Xie, Published by MDPI St. Alban-Anlage 66 Basel, Switzerland, 1st ed. 2018.
4. Yasser Sabry, **Diaa Khalil**, and Tarik Bourouina, "Optical MEMS Interferometers", in, "Interferometers: fundamentals, methods, and applications", Ed., Kystal Harmon, Series: Physics research and technology, Nova Science publisher Inc., New York, 2015.
5. Ayman Y. Hamouda and **Diaa Khalil**, "Three-dimensional Integrated Optics: MMI couplers for multilevel PHASAR", in "Frontiers in Planar Lightwave Circuit Technology: Design, Simulation, and Fabrication", NATO Science Series II: Mathematics, Physics and Chemistry Vol. 216, S. Jans et al Eds. 2006 Springer.

II- Refereed Journal publications [140 with total impact points > 400]:

- 1- Kirollos Ernest, Ahmed Abd-Rabou, Yasser M. Sabry, and **Diaa Khalil**, "A novel W-trough concentrator optimizing the acceptance angle and cell illumination uniformity", accepted for publication, Journal of applied Energy, 2023.
- 2- Salwa Elsabban and **Diaa Khalil**, "2D spot size converter using a multilevel asymmetric coupler MAC structure for Si photonics planar technology," J. Opt. Soc. Am. B **40**, 79-86 (2023).
<https://opg.optica.org/josab/abstract.cfm?URI=josab-40-1-79>
- 3- Ahmed Mostafa, Yasser Sabry, Haitham Omran, Hassan El-Nashar, Ahmed Samir, and **Diaa Khalil**, "Modeling of surface roughness in deeply etched photonic MEMS mirrors and filters", Optical Engineering, Vol. 61, Issue 11, 117105, (November 2022) <https://doi.org/10.1117/1.OE.61.11.117105>.

- 4- A. M. Othman, H. E. Kotb, M. A. Abdelalim, Y. M. Sabry, H. Anis and **D. Khalil**, "Numerical Study of Parabolic Pulse Generation in Backward-pumped Erbium-doped Fiber Amplifiers," in *IEEE Photonics Journal*, 2022, doi: 10.1109/JPHOT.2022.3195902.
- 5- M. Said, A. Wahba, and **D. Khalil**, "Semi-Supervised Deep Learning Framework for Milk Analysis using NIR Spectrometers", 104619, *Journal of Chemometrics and Intelligent Laboratory Systems*, Volume 228, 15 September 2022
- 6- Yasser M. Sabry, Mazen Erfan, **Diaa Khalil**, and Tarik Bourouina, "Critical analysis of in-plane free-space light beam coupling using photonic curved micromirrors," *SPIE, J. Optical Microsystems*, Vol. 2, Issue 3, 034001 (9 July 2022) <https://doi.org/10.1117/1.JOM.2.3.034001>.
- 7- Wageeh, A., El-Sabban, S. & **Khalil, D.** "Optical phase shifter design for single and multi-mode waveguide configurations", *Opt Quant Electron* **54**, 499, Published 7 July (2022). <https://doi.org/10.1007/s11082-022-03883-6>.
- 8- Abdel-Galil, M., Swillam, M., Ismail, Y. and **Khalil, D.**, "High sensitivity refractive index sensing using zone plate metasurfaces with a conical phase profile", *Nature Publishing Group, Sci. Rep.* **12**, 8978 (28 May 2022). <https://doi.org/10.1038/s41598-022-12849-3>
- 9- Alaa Fathy, Yasser M. Sabry, Ian W. Hunter, **Diaa Khalil**, and Tarik Bourouina, "Direct Absorption and Photoacoustic Spectroscopy for Gas Sensing and Analysis: A Critical Review", 10 May 2022, <https://doi.org/10.1002/lpor.202100556>
- 10- Mohamed N. Ali, Yasser M. Sabry, Khaled A. Kirah, and **Diaa Khalil**, "Analysis of metallic slotted micromirrors using modal decomposition and multiple reflections," *J. Opt. Soc. Am. B* **39**, 586-593 (2022).
- 11- Erfan, M., Gnambodoe-Capochichi, M., Sabry, Y.M., **Diaa Khalil**, Yamin Leprince-Wang and Tarik Bourouina, "Spatiotemporal dynamics of nanowire growth in a microfluidic reactor", *Nature Publishing Group, Microsyst Nanoeng* **7**, 77 (2021). <https://doi.org/10.1038/s41378-021-00308-4>.
- 12- Moez El-Massry, Sebastien Nazeer, Yasser M. Sabry, and **Diaa Khalil**, "Physical Parameter Extraction and Modeling of Metallized Deeply-Etched Vertical Mirrors", *IEEE Journal of Microelectromechanical Systems*, Vol. 30(6), pp. 930–938, 2021.
- 13- Amr O Ghoname, Yasser Mohammed Sabry, and **Diaa Khalil**, "Modelling of ATR-FTIR MEMS Spectrometer under Partially-Coherent Multimode-Fiber Illumination", *IEEE Journal of Lightwave Technology*, Vol. 39(22), pp. 7092–7098, 2021.
- 14- ElZeiny, Walid ElSayed; Sabry, Yasser M.; **Khalil, Diaa A.**, "Complex Kernel-based spectrum reconstruction algorithm for cascaded Fabry–Perot interferometric spectrometer", *OSA, Applied Optics* Vol. 60, Issue (29) pp. 8999-9006, 2021 <https://doi.org/10.1364/AO.433417>.
- 15- Bassem Mortada, Mostafa Medhat, Yasser M Sabry, Mohamed Sadek, Ahmed Shebl, Khalid Hassan, Moez El-Masry, Yasseen Nada, Momen Anwar, Mina Gad, Mohamed Hamouda Al Haron, Bassam Saadany, **Diaa Khalil**, and Tarik Bourouina, "Ultra-Compact Fourier Transform Near-Infrared MEMS Spectral Sensor for Smart Industry and IoT", *IEEE Journal of Selected Topics in Quantum Electronics*, 27(6), 9462357, 2021.
- 16- Tarek A. Alsaheed and **Diaa A Khalil**, "Characteristics of a refractometer based on Michelson Interferometer integrated with a Fabry-Perot interferometer", 167170, *Optik* **242**, Elsevier, 2021.
- 17- A. K. Shaheen, Y. M. Sabry and **D. Khalil**, "Modeling of Fabry-Perot micro cavities under partial spatial coherence illumination using multimode optical fibers," in *IEEE/ OSA Journal of Lightwave Technology*, 31 March 2021, doi: 10.1109/JLT.2021.3069898.
- 18- Salem, A. M., Sabry, Y. M., Fathy, A., **Khalil, D. A.**, "Single MEMS Chip Enabling Dual Spectral-Range Infrared Micro-Spectrometer with Optimal Detectors", *Adv. Mater. Technol.* Wiley online, 22 March 2021, 2001013. <https://doi.org/10.1002/admt.202001013>
- 19- A. Fathy, Y. M. Sabry, **D. Khalil** and T. Bourouina, "Differential Optical Spectrometer based on Critical Angle Dispersion," in *Journal of Lightwave Technology*, Feb. 2021, doi: 10.1109/JLT.2021.3057787
- 20- Ahmed M. Othman, Hussein E. Kotb, Yasser M. Sabry, and **Diaa Khalil**, "Micro-Electro-Mechanical System Fourier Transform Infrared (MEMS FT-IR) Spectrometer Under Modulated–Pulsed Light Source Excitation," *Appl. Spectrosc.* Vol. 74, issue 7, pp. 799-807, July 2020.
- 21- M. A. Selim, Y. M. Sabry and **D. Khalil**, "Sensitivity Enhancement Factor for Gain-Assisted Cavity Enhanced Spectroscopy", *IEEE Journal of Quantum Electronics*, vol. 56, no. 3, pp. 1-8, June 2020, Art no. 7700108, doi: 10.1109/JQE.2020.2984765.
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- 299- Amr Ghonaim, Ashraf Mahmoud, Yasser Sabry, and **Diaa Khalil**, "Omnidirectional Optical MEMS Scanner Based on Two Degree-of-Freedom Translation of Acylindrical Micromirrors", 35th National Radio Science Conference (NRSC), Cairo, Egypt, March 2018 (**Best Paper Award**).
- 300- Aya Osama, Yasser Sabry, and **Diaa Khalil**, "Long Travel Range Thermal Actuator for Deeply Etched MEMS Components", 35th National Radio Science Conference (NRSC), Cairo, Egypt, March 2018.
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- 304- Yasser M. Sabry, **Diaa Khalil**; and Tarik Bourouina, "Distortion of Gaussian beams reflected off-axis on curved mirrors in the MEMS scale", 34th National Radio Science Conference (NRSC), Alexandria, Egypt, April 2017.(**Best paper award**).
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- 313- Yasser Sabry, Haitham Omran, and **Diaa Khalil**, "Intrinsic Improvement of Diffraction-Limited Resolution in Optical MEMS Fourier-Transform Spectrometers", The 31th National Radio Science Conference NRSC 2014, Cairo Egypt. (**Best Paper Award** in the conference)
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- 341- **Diaa Khalil** and Smail Tedjini, "Une nouvelle structure pour la commutation électrooptique en utilisant le couplage cohérent de modes rayonnés", 4^{ème} Journées Microelectronique et Optoelectronique III-V, La Grand Motte, 21-23 octobre 1992.
- 342- **Diaa Khalil** and Smail Tedjini, "Homodynage optique pour la génération des signaux microondes", Journées Optique et Microondes, Chapitre Français IEEE-MTT 26-27 novembre 1992.
- 343- **Diaa Khalil** and Smail Tedjini, "Une nouvelle structure pour la modulation électrooptique rapide", Journées Optique et Microondes, Chapitre Français IEEE-MTT 26-27 novembre 1992.
- 344- **Diaa Khalil**, Pierre Benech, and Smail Tedjini, "Utilisation de la jonction Y comme capteur de déplacement", Douzièmes Journées Nationales d'Optique Guidée, JNOG92, Paris, 22-23 Jan. 1992.
- 345- **Diaa Khalil** and S. Tedjini, "Etude de l'effet de la region transitoire dans les jonctions type "Y" par la BPM", 11^{ème} Journées Nationales d'Optique Guidée JNOG90, Grenoble, 17-19 October 1990.
- 346- **Diaa A. Khalil** and H. F. Ragaie, "Computer Aided Characterization for solar cells", 10th International congress for statistics and computer science research in Cairo, April 1985.

V- International Invited Talks [Total 15]:

- 347- **Diaa Khalil**, "Optical Rotation Sensors: Challenges and Opportunities", ASAT 2021, The 19th International Conference on Aerospace Sciences & Aviation Technology (ASAT-19), MTC, Cairo Egypt. 6-8 April 2021.
- 348- **Diaa Khalil**, "MEMS Based Swept Laser Source", Light Conference 2019, Light science and Applications Nature Journal and Chinese Academy of Science, Changchun Institute of Optics, Fine Mechanics and Physics (CIOMP) Changchun, China, 16 - 18 July 2019.
- 349- **Diaa Khalil**, "Optical spectroscopic gas sensing with MEMS Technology", Light Conference 2018, Light science and Applications Nature Journal and Chinese Academy of Science, Changchun Institute of Optics, Fine Mechanics and Physics (CIOMP) Changchun, China, 16 - 18 July 2018.
- 350- **Diaa Khalil**, "Miniaturized FTIR Spectrometers for Pollution Monitoring", Microbial Electron Transfer for Wastewater Treatment: Innovative Approaches & Applications, METRIS, Cairo-MET 2019. Cairo, Egypt, 9-10 Sept. 2019.
- 351- **Diaa Khalil**, "Tiny spectral sensor: An ICT solution for the improvement of our quality of life", **Keynote Speech** in the INTERSOL conference, Cairo, Egypt, 14-15 Feb. 2019.
- 352- **Diaa Khalil**, "MEMS Based Gas Sensing: Challenges and Potential", **Keynote Speech** at the Japan Africa Conference JAC-ECC, Alexandria Egypt, 18-20 Dec. 2017.
- 353- **Diaa Khalil**, "A MEMS Spectral Sensor for the IoT Development", **KeyNote Speech** at ICaTAS 2016 & MJJIC 2016, Malaysia 2016.
- 354- **Diaa Khalil**, "A MEMS FTIR Sensor for the IoT Applications", **Keynote Speech** at the Japan Egypt Conference JEC-ECC, Cairo Egypt, 2016.
- 355- **Diaa Khalil**, "Optical MEMS for Biomedical Imaging: Potential and Challenges of Integrated OCT Head Module", the 3rd Saudi International Nanotechnology Conference SINC 2014, Riyadh, Saudi Arabia, 1-3 Dec. 2014.
- 356- **Diaa Khalil**, "MEMS Interferometers for Biomedical Applications", CIBEC 2012, the 6th Cairo International Conference on Biomedical Engineering, Cairo, Egypt, Dec.20-22, 2012
- 357- **Diaa Khalil**, "MEMS Spectrometer and Optical Coherence Tomography Module", MECAP 12, 2nd Middle East Conference on Antennas and Propagation, AUC, Cairo Egypt, 29-31 Dec. 2012.

- 358- **Diaa Khalil**, “Silicon Integrated Spectrometers: A New Era of Sensors for Monitoring and Hand-held Applications”, 2012 UCSWSN Workshop: Ubiquitous Computing: Sensors and Wireless Sensors Network, Cairo Egypt, October 2012.
- 359- **Diaa Khalil**, “Integrated Micro-Optical Systems Technology IMOST on a Silicon Substrate”, First International Conference on Electronics, Communications and Photonics (SIEPC 2011), Riyadh, Saudi Arabia, 23rd - 26th April, 2011.
- 360- **Diaa Khalil**, Haitham Omran, Mostafa Medhat, and Bassam Saadany, “Miniaturized tunable integrated Mach-Zehnder MEMS interferometer for spectrometer applications”, Invited talk at SPIE Photonics West in San Francisco, California, USA, 23-28 January 2010.
- 361- **Diaa Khalil**, “The Si Optical Bench Technology: Challenges and Opportunities”, Invited talk at the 6th International Symposium on “High-capacity Optical Networks & Enabling Technologies” (HONET’09), Alexandria, Egypt, Dec. 2009.

VI- National Invited Talks [Total 15]:

- 362- **Diaa Khalil**, “Plasma Applications in MEMS Etching”, Plasma and Nuclear Fusion: Theory and Applications: EAEA & ASRT-NRSC, Cairo, Egypt, 3 Nov. 2020
- 363- **Diaa Khalil**, “MEMS Based Tunable Laser Source”, ILAS Conf., Cairo Egypt 2019.
- 364- **Diaa Khalil**, “ICT Smart Farming Applications: Smart Spectral Sensing Solutions S⁴”, 14th Scientific Conference for Agriculture Development Research, Faculty of Agriculture, ASU, Cairo Egypt, 2019.
- 365- **Diaa Khalil**, “A cell phone FTIR MEMS Spectrometer: Challenges and Opportunities”, Ain Shams University Conference, Cairo, Egypt 2018.
- 366- **Diaa Khalil**, “MEMS based Swept laser source for biomedical imaging”, **Keynote Speech** at the 34th NRSC, Alexandria, Egypt, April 2017.
- 367- **Diaa Khalil**, “The MEMS FTIR Spectrometer: An Optical IC to Analyze Everywhere”, **Keynote Speech** at the 33rd NRSC, Aswan, Egypt, Feb. 2016.
- 368- **Diaa Khalil**, “Towards an Integrated OCT MEMS based Module for Biomedical Imaging”, ICEAC 2015, Cairo, Egypt, March 2015.
- 369- **Diaa Khalil**, “Integrated Optical Systems on a Silicon Substrate: Potential and Challenges”, Workshop of Applications of Nanotechnology in Electronics, Optics and Communications, ERI, Cairo Egypt, May 14th 2014.
- 370- **Diaa Khalil**, “Optical MEMS Devices: From Components to Integrated Micro- Systems”, Nano technology workshop, Mansura University, Mansura, Egypt, July 2012.
- 371- **Diaa Khalil**, “Silicon Integrated Micro Interferometers for Sensing Applications”, NRSC 2012, Cairo Egypt, April, 2012.
- 372- **Diaa Khalil**, “Silicon Integrated Micro-Optical Systems Technology SiMOST: The Technology of Integrated Optical Bench”, IEEE Egypt chapter, Mini-Colloquium, Future University, Cairo Egypt, March 2012.
- 373- **Diaa Khalil**, Hussein E. Kotb, and Khalid Hassan, “Laser Diode Parameter Extraction”, 1st International workshop of lasers and plasmas”, Cairo, Egypt, March 2008.
- 374- **Diaa Khalil**, “Optical MEMS for telecommunication Applications”, US-Africa Materials Workshop, Cairo, Egypt, 14-15 December 2004.
- 375- **Diaa Khalil**, “Recent trends in Optical MEMS for telecommunication applications”, the 4th workshop on photonics and its applications, Cairo, Egypt, May 4, 2004.
- 376- **Diaa Khalil**, “Advances in optical filters”, the 2nd workshop on teaching photonics at Egyptian engineering faculties and institutes, Proceedings, pp. 1-27, Cairo Egypt, 24 Oct. 2000.

7- Industrial Experience

- 2007 - 2020** Chief Technical Officer **CTO of the MEMS** division in the company **Si-Ware Systems** responsible for all the technical aspects required for the development of the Optical MEMS products fabricated on a Si substrate using DRIE technology.
- 2006/07** Technical Consultant for the company **Mentor Graphics** Egypt, responsible for building a team working in the Design to Silicon D2S Engineering. This responsibility includes hiring and technical training to build the domain knowledge required in the field of optical and technology modeling of the photolithography process including the Resolution Enhancement Techniques RET and Optical Proximity Corrections OPC.

2004/2005	Consultant for the Company SWS (Smart Wireless Systems) responsible for the full optical characterization of a 4 Km laser transmitter used in an army training Multiple Integrated Laser Engagement System (MILES) 2000 compatible.
2004	Consultant in integrated optics for the company Teem Photonics Grenoble France where for a period of 6 months I supervised a remote team working for the design and optimization of a LD array combiner for high power applications and succeeded to achieve a significant increase in the coupling efficiency by innovating a vertical to horizontal coupling structure.
2003/2004	Consultant for imaging systems and CAD development for optical MEMS at MEMScAP Egypt. In this period I supervised a team working on the design and optimization of a compact imaging and illumination IR system for the skin diagnostics. He also helped as a consultant for the CAD team for the development of a first spice model of an all optical component, the 2x2 optical switch and building of MEMS optical library. This team has later spun off to form the company SoftMEMS.
2000/2003	Head of optical MEMS design group at MEMScAP Egypt. During this period, he managed the optical design in MEMScAP Company leading to the design, fabrication and characterization of a 2x2 switch, the design and characterization of a VOA (variable Optical Attenuator) with the innovation of a new VOA design leading to a VOA with the minimum PDL (0.1dB) reported for wide dynamic range (30dB). He also introduced the use of Hollow guide in the cross connect switch to enhance its performance. His work during these 2 years led to 5 patents in the optical MEMS.
1994/1996	Share holder and member of the board of the society “ ANACAD Egypt ” for the development of CAD tools for analogue integrated circuits and systems. This company is then transformed to Mentor Graphics Egypt with the same activity.

8- Patents:

Granted Patents:

- 1- **Diaa Khalil**, Kareem Madkour, Bassam Saadany, Tarek Badreldin, and Philippe Helin, “Optical switching matrix and method of fabricating such a matrix”, US 6847756 B2, Jan. 25, 2005.
- 2- Bassam A. Saadany, **Diaa A. Khalil**, and Tarik E. Bourouina, “System, Method and Apparatus for a Micromachined Interferometer Using Optical Splitting”, **US 7796267 B2**, Sept. 2010 & **US 8508745 B2**, August 2013.
- 3- **Diaa A. Khalil**, Bassem Mortada, Mohamed Nabil, Mostafa Medhat, Bassam A. Saadany, “Compensated MEMS FTIR spectrometer architecture”, US 8531675 B2, Sept. 2013.
- 4- **Diaa A. Khalil**, and Hisham Haddara, “Ultra-wide angle MEMS scanner architecture”, US 8411340 B2, April 2013.
- 5- Mostafa Medhat, Bassam A. Saadany, **Diaa A. M. Khalil**, and Bassem Mortada, “Opto-mechanical optical path retardation multiplier for optical MEMS applications”, EP 2419770 B1, Mar. 2013.
- 6- **Diaa A. Khalil** and Bassam A. Saadany, “Interferometer with variable optical path length reference mirror using overlapping depth scan signals”, US 8792105 B2, July 2014.
- 7- Bassem Mortada, **Diaa Khalil**, and Bassam A. Saadany, “Spatial splitting-based optical MEMS interferometers”, US8922787 B2, July 2014.
- 8- **Diaa Khalil**, Ahmed Khaled Hassan Mohamed Salem, Ahmed Saeed Shebl, Marwan Alayed, Fahad Aljekhedab“, MEMS based ring laser gyroscope with reduced lock-in”, EP2761253 B1, Sept. 9, 2015.
- 9- Yasser M. Sabry, Tarik Bourounia, **Diaa Khalil** and Bassam Saadany “Integrated monolithic optical bench containing 3-D curved optical elements and methods of its fabrication” US9046690 B2, June 2 2015.
- 10-Yasser M. Sabry, **Diaa Khalil**, Bassam Saadany and Tarik Bourounia “Aspherical optical surfaces and optical scanners” US9158109 B2, Oct. 13, 2015.
- 11-Mohamed Yehia Shalaby, Kamal Mohammed Khalil, Abdelrahman Emad El-Deen Hussien, **Diaa Khalil**, Khaled Hassan, Faris Alarifi, Mohammed Al-Otaibi, “Ring mirror optical rotation sensor”, US9476713B2, Oct. 25, 2016.
- 12-Yasser M. Sabry, **Diaa Khalil** and Bassam Saadany “Fourier transform micro spectrometer based on spatially-shifted interferogram bursts” US9476713B2, August 30, 2016.
- 13-Yasser M. Sabry, **Diaa Khalil**, Tarik E. Bourouina, and Momen Anwar, “Structured silicon-based thermal emitter”, US9793478B2, Oct. 17, 2017
- 14-Yasser M. Sabry, **Diaa Khalil** and Mohammed Sadek “Integrated apertured micromirror and applications thereof”, US9557556 B2, Jan. 31, 2017.
- 15-**Diaa Khalil**, Bassam A. Saadany, and Yasser M. Sabry, “High performance parallel spectrometer device”, US 9970819 B2, May 15, 2018.
- 16-Yasser M. Sabry, **Diaa Abdel Maged Khalil**, Mostafa Medhat, Hisham Haddara, Bassam Saadany, Khaled Hassan, “Integrated Spectral Unit”, US10060791 B2, August 28, 2018.

- 17-Bassam Saadany, Mostafa Medhat, Muhammad Nagi, Ahmed Shebl, Yasser M. Sabry, Bassem Mortada and **Diaa Khalil**, “Integrated optical probe card and system for batch testing of optical MEMS structures with in-plane optical axis using micro-optical bench components”, US10782342B2, Sept. 22, 2020.

Some additional published Patent Applications:

- 18- Yasser M Sabry, Alaa Fathy, **Diaa Abdelmaguid Khalil**, Tarik Bourouina, and Bassam A Saadany, “integrated device for fluid analysis”, US 2020/0378892 A1, Dec. 3, 2020.
- 19- Mohamed A. Abdelalim, Hanan Anis, and **Diaa Khalil**, “All-gain guiding Yb-doped femtosecond fiber laser”, US 20120033686 A1, Feb. 2012.
- 20- Bassam A. Saadany, Mohamed Sadek, Haitham Omran, and **Diaa A. M. Khalil**, “MEMS based swept laser source”, US20150010026A1, 2015.
- 21- **Diaa Khalil**, Aymen H Bashir, Ahmed H Osman, Pekka Katila, Morshed Ahmed H Eissa, and Bassam Saadany, “Micromechanical based variable optical attenuator having moving walls with sloped V shaped wall stops outside central optical fibre section”, FR2849217A1, 2003.
- 22- Yasser M. Sabry, Bassem A. MortadaKhaled, HassanAbdelrahman, Ahmed Maher Mohamed Elsayed Salem, **Diaa Khalil**, Mohamed H. Al Haron, Mohammed Ahmed Elsheikh, Ahmed Shebl, Bassam Saadany, Mostafa Medhat, Botros George Iskander Shenouda, ” Compact material analyzer” , US20220244101A1, 2022.
- 23- YM Sabry, AO Ghoname, M Anwar, and **D Khalil**, “Integrated evanescent wave spectral sensing device” - US Patent App. US 20220260419A1, August 2022.