

## 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.**

**Vice Dean of the Faculty of Eng. ASU, for the Post Graduate and Research affairs.**

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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 2x2 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. 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 320 publications, in international journals and conferences, in addition to 4 book chapters and 1 ebook published by SPIE.

#### **2- Personal Data:**

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

#### **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:

- 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
2004/2006	Assistant Manager	Optical Communications and Optoelectronics Engineering Technology Education and consultation facility <b>OCETEC</b>	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, Zwait City for Science and Technology, Egypt.

**In the Industry**

20. Dr. Bassam A. Saadany, CTO and COO, Si-Ware Systems Company, Egypt.
21. Dr. Kareem Madkour, Mentor Graphics, Siemens, Egypt
22. Dr. Tamer Al Azhary, Optical scientist at Facebook, USA.
23. Dr. Mohamed Abdel Hakeem, Intel Corp., USA
24. Dr. Muhamed Abdel Raouf Othman, Orange Company.
25. Dr. George Ishak Aziz, JDSU Company, USA.
26. Dr. Maurin Malak, EPFL, Switzerland.
27. Eng. Mostafa Medhat, Marketing Manager, Si-Ware Systems Company, Egypt.
28. ....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 2013 till now, 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.
- 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.
- Member in the Scientific Committee of the first International Conference on Nano Technology Theory and Applications” supported by the National Nanotechnology Network, N<sup>3</sup>, Cairo, Egypt Dec. 2018.
- Member in the Scientific Program committee of the conference MOEMS and Miniaturized Systems XVIII, part of the Photonics West, SPIE Conference, held in SF, USA in Feb. 2019, Feb. 2020, and March 2021.
- Member in the “NNN” National Network for Nano- technology in Egypt.
- 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.
- 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:**

- *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.
- 35<sup>th</sup> National Radio Science Conference NRSC, Cairo, Egypt, March 2018 (**Best Paper Award**).
- 34<sup>th</sup> National Radio Science Conference NRSC, Alexandria, Egypt, April 2017 (**Best paper award**).
- 33<sup>rd</sup> National Radio Science Conference NRSC, Aswan, Egypt, February 2016 (**Best Paper Award**).
- 32<sup>nd</sup> National Radio Science Conference NRSC, Cairo, Egypt 2015 (**Best Student Paper Award**).
- 31<sup>th</sup> 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 10<sup>th</sup> 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	2616
h-index	24
i10-index	88

### **Scopus Metrics:**

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

Citations	1859
h-index	21

### **Web of Science**

Citations	1620
h-index	19

### **Details of Publications:**

## I- Books and Book Chapters

### a. *Book:*

- i. 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. 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.
2. 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, 1<sup>st</sup> ed. 2018.
3. 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.
4. 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 [130 with total impact points > 370]:*

- 1- 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>.
- 2- 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.
- 3- 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.
- 4- 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>.
- 5- 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.
- 6- Tarek A. Alsaeed and **Diaa A Khalil**, “Characteristics of a refractometer based on Michelson Interferometer integrated with a Fabry-Perot interferometer”, 167170, *Optik* 242, Elsevier, 2021.
- 7- 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.
- 8- 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>
- 9- 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
- 10- 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.
- 11- 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.



- 12- Amr Wageeh, Salwa El-Sabban, and **Diaa Khalil**, “Design of a 2D fiber mode converter using a planar 2D multi-mode interference structure”, *Optik*, Vol. 210, paper 164500, May 2020, doi.org/10.1016/j.jjleo.2020.164500.
- 13- Alaa Fathy, Yasser M Sabry, Martine Gnambodoe-Capochichi, Frederic Marty, **Diaa Khalil**, and Tarik Bourouina, “Silicon Multi-Pass Gas Cell for Chip-Scale Gas Analysis by Absorption Spectroscopy”, *Micromachines* 2020, Vol. 11, Issue (5), pp. 463; <https://doi.org/10.3390/mi11050463>.
- 14- Omar Abdelkarim, Mohamed Hazem Abdellatif, **Diaa Khalil**, and Ghada Bassioni, “FTIR and UV in steel pipeline coating application“, *International Journal of GEOMATE*, May, 2020, Vol.18, Issue 69, pp. 130 – 135, ISSN: 2186-2982 (P), 2186-2990 (O), Japan, DOI: <https://doi.org/10.21660/2020.69.9427>.
- 15- Haitham Omran, Mohab Sameh, Ahmed Mahfouz, Omar Saad, Maram T. H. Abou Kana, Frédéric Marty, **Diaa Khalil**, Tarik Bourouina, and Yasser M. Sabry, “Visible Laser on Silicon Optofluidic Microcavity”, *Advanced Materials Technologies*, Volume 5, Issue 5, First published: 24 March 2020.
- 16- Alaa Fathy, Tarik Bourouina, Yasser Sabry, Sebastien Nazeer, and **Diaa Khalil**, “On-chip parallel Fourier transform spectrometer for broadband selective infrared spectral sensing”, *Microsystems and Nano Engineering journal, Microsyst Nanoeng* **6**, Nature Publishing Group., 10 (2020). <https://doi.org/10.1038/s41378-019-0111-0> 2020.
- 17- El Shamy, R.S., **Khalil, D.** and Swillam, M.A., “Mid Infrared Optical Gas Sensor Using Plasmonic Mach-Zehnder Interferometer”, *Scientific Reports* 10, Nature Publishing Group, 1293, 28 Jan. 2020. <https://doi.org/10.1038/s41598-020-57538-1>.
- 18- Alaa Fathy, Marie Le Pivert, Young Jai Kim, Mame Ousmane Ba, Mazen Erfan, Yasser M. Sabry, **Diaa Khalil**, Yamin Leprince-Wang, Tarik Bourouina, and Martine Gnambodoe - Capochichi, “Continuous Monitoring of Air Purification: A Study on Volatile Organic Compounds in a Gas Cell”, *Sensors* 2020, 20(3), 934; <https://doi.org/10.3390/s20030934>.
- 19- Eltagoury, Y. M., Sabry, Y. M., and **Khalil, D. A.**, All-Silicon Double-Cavity Fourier-Transform Infrared Spectrometer On-Chip.”, *Adv. Mater. Technol.* 2019, 1900441. <https://doi.org/10.1002/admt.201900441>.
- 20- John O. Gerguis, Yasser M. Sabry, Haitham Omran, and **Diaa Khalil**, "Spectroscopic Gas Sensing Based on a MEMS-SOA Swept Fiber Laser Source," *J. Lightwave Technol.* Vol. 37, pp. 5354-5360, Oct. 2019.
- 21- Haitham Omran and **Diaa Khalil**, “White Light Interferometry of SOI Deeply-Etched Fully Integrated MEMS Interferometers”, (*JESC*) *The Journal of Engineering, Science and Computing* Issue I, Volume I, pp. 20-32, April, 2019.
- 22- Islam Samir, Yasser M. Sabry, Alaa Fathy, Amr O. Ghoname, Niveen Badra, and **Diaa A. Khalil**, “Autoregressive superresolution microelectromechanical systems Fourier transform spectrometer”, *Applied Optics*, Vol. 58, Issue 25, pp. 6784-6790, 1 September 2019, <https://doi.org/10.1364/AO.58.006784>
- 23- Raghi Elshamy, Mohamed A. Swillam, **Diaa A. M. Khalil**, “Mid Infrared Integrated MZI Gas Sensor Using Suspended Silicon Waveguide”, *OSA, IEEE Journal of Lightwave Technology*, 2019.
- 24- Salwa El-Sabban and **Diaa Khalil**, “Odd excitation of symmetric MultiMode Interference (MMI) structures”, *OSA, Journal of Applied Optics*”, Vol. 58, No. 14, pp. 3836- 3843, 10 May 2019.
- 25- J. O. Gerguis, YM Sabry, and **D. A Khalil**, “Capturing the Instantaneous Spectral Response of a MEMS Swept Laser Source Using a Quasi-Static Tunable Filter”, *IEEE Journal of Selected Topics in Quantum Electronics*, Volume 25, Issue 6, Nov.-Dec. 2019.
- 26- Noha Anous, Tarek Ramadan, Mohamed Abdallah, Khalid Qaraqe, and **Diaa Khalil**, “Planar asymmetric nano-resonators for highly angle tolerant trans-reflective color filters”, *OSA Continuum* Vol. 2, No. 3, pp. 890-904, 2019.
- 27- M.A. Othman, YM Sabry, A.M. Othman, I. M. Nassar, and **D. A. Khalil**, “Modal analysis of TE and TM excitations in a metallic slotted micromirror”, *Journal of Optical Society of America JOSA B*, Vol. 36, No. 3, pp. 610-615, 2019.
- 28- H. Shawki, H. Kotb, and **Diaa Khalil**, “Modeling and characterization of a dual-wavelength SOA-based single longitudinal mode random fiber laser with tunable separation”, *OSA Continuum*, Vol. 2, No. 2, pp. 358-369, 2019.
- 29- MA Selim, GA Adib, YM Sabry, and **Diaa Khalil**, “Incoherent Gain-Assisted Ring Enhanced Gas Absorption Spectroscopy”, *IEEE Journal of Quantum Electronics* Vol. 55, No. (1), pp. 1-8, 2019.
- 30- Noha Anous, Tarek Ramadan, Mohamed Abdallah, Khalid Qaraqe, **Diaa Khalil**, “Impact of blue filtering on effective modulation bandwidth and wide-angle operation in white LED-based VLC systems”, *OSA Continuum*, Vol. 1, No. 3, Nov. 2018.
- 31- Ahmed M. Othman, Hussein E. Kotb, Yasser M. Sabry, Osama Terra, and **Diaa A. Khalil**, ” Toward On-Chip MEMS-Based Optical Autocorrelator”, *OSA \_ IEEE Journal of light wave Technology*, VOL. 36, NO. 20, pp. 5003-5009, October, 2018.
- 32- Islam Samir El-Sayed, Yasser M Sabry, Walid ElSayd ElZeiny, Niveen Badra, and **Diaa A Khalil**, “Transformation algorithm and analysis of the Fourier transform spectrometer based on cascaded Fabry–Perot interferometers”, *OSA Journal of Applied Optics*, Vol. 57, No. 25, pp. 7225-7231, Sept. 2018.

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- 242- Ahmed Hussein, Ahmed Nounou, Nehal Saada, Dina Atef and **Diaa Khalil**, "SPICE Modeling of Free-Space Optical Systems", 2006 IEEE/ACM International Workshop on Behavioral Modeling and Simulation (BMAS'06), USA, 2006.
- 243- B. Saadany, **D. Khalil**, and T. Bourouina, "Highly Efficient Micro-machined Bragg Mirrors Using Advanced DRIE Process", The 2006 International Conference on MEMS, NANO and Smart Systems December 27-28, 2006, Cairo, Egypt.
- 244- H. E. Kotb, A. M. E. Safwat, H. Boghdady, and **D. Khalil**, "Tuning of an RF Optoelectronic Oscillator", International Topical Meeting on Microwave Photonics MWP 2006, Grenoble France.
- 245- B. Saadany, T. Bourouina, M. Malak, M. Kubota, Y. Mita, and **D. Khalil**, "A Miniature Michelson Interferometer using Vertical Bragg Mirrors on SOI", IEEE/LEOS International Conference on Optical MEMS and Their Applications, 21 - 24 August 2006, Big Sky, Montana, USA.
- 246- B. Saadany, **D. Khalil**, M. Malak, M. Kubota, F. Marty, Y. Mita, and T. Bourouina, "An all Silicon Micro-machined Add-Drop optical filter", IEEE/LEOS International Conference on Optical MEMS and Their Applications, 21 - 24 August 2006, Big Sky, Montana, USA
- 247- B. Saadany, M. Malak, F. Marty, Y. Mita, **D. Khalil**, and T. Bourouina, "Electrostatically-tuned Optical Filter Based on Silicon Bragg Reflectors", IEEE/LEOS International Conference on Optical MEMS and Their Applications, 21 - 24 August 2006, Big Sky, Montana, USA
- 248- Tarek Badreldin, Kareem Madkour and **Diaa Khalil**, "Design of Silicon Hollow waveguide Polarizer using Multilayer Structure", IEEE 2<sup>nd</sup> International conference on Group IV photonics, Antwerp, Belgium, 21- 23 September 2005.
- 249- M. Swillam, A. H. Morshed and **D. Khalil**, "Optimized 3D design of an MMI splitter with ion exchange technology", SPIE's Photonics North Symposium, Toronto, Ontario, Canada. 12-14 September 2005.
- 250- B. Saadany, F. Marty, Y. Mita, **D. Khalil**, and T. Bourouina, "A MEMS Tunable Optical Filter Based on Vertical DBR Architecture", DTIP 2004, Montreux, Switzerland, 12-14 May 2004.
- 251- Hesham Maaty, **Diaa Khalil** and Tarik Bourouina, "Optical Characterization of Single Crystal Silicon Microlens Fabricated by the 'MEMSNAS' Process", The 46<sup>th</sup> IEEE International *Midwest Symposium on Circuits and Systems*, MWSCAS, 27-30, Cairo, Egypt, December 2003.
- 252- Mohamed Gheith, Ahmed Hussein, Kareem Madkour Bassam Saadany, and **Diaa Khalil**, "A Micromachined Coupled-cavity Tunable Optical Filter", The 46<sup>th</sup> IEEE International *Midwest Symposium on Circuits and Systems*, MWSCAS, Cairo, Egypt, 27-30 December 2003.
- 253- M. S. Mahmoud, **D. Khalil**, M. T. El- Hagry and M. A. Badr, "High speed, large displacement comb drive design validation using Finite Element Modeling", International Conference in Microelectronics, ICM'03, Cairo, Egypt, Dec. 2003.
- 254- Kareem Madkour, Hesham Maaty, Tarek Badreldin, Bassan Saadany, and **Diaa Khalil**, "Silicon hollow waveguide for MEMS applications", ECOC-IOOC 2003, Rimini, Italy, 21-25 September 2003.

- 255- B. Saadany, T. Bourouina, and **D. Khalil**, "Design of a MEMS tunable optical filter based on a novel vertical DBR architecture", MEMSWAVE 03, 4<sup>th</sup> Workshop on MEMS for millimeter wave communications, Toulouse, France, 2–4 July 2003.
- 256- A. Bashir, B. Saadany, P. Katila, A.H. Morshed and **D. Khalil**, "PDL modeling in a transmission type MEMS based VOA", MEMSWAVE 03, 4<sup>th</sup> Workshop on MEMS for millimeter wave communications, Toulouse, France, 2–4 July 2003.
- 257- Ayman Yehia and **Diaa Khalil**, "Multi-Stage MMI-PHASAR De-Multiplexer for DWDM Applications with High Number of Channels", Proceedings of the IEEE Mediterranean Microwave Symposium MMS'2003, Cairo, Egypt, pp. 52-55, May 2003.
- 258- Salwa M. Eltaweel, **Diaa Khalil**, Omar A. Omar, and Mahmoud. H. Ahmed, "Modeling of a quantum dot Structure using an effective potential technique", Proceedings of the IEEE Mediterranean Microwave Symposium MMS'2003, Cairo, Egypt, pp. 56-60, May 2003.
- 259- M. A. Swillam, A. Yehia, A. H. Morshed, and **D. Khalil**, "Self-Imaging in Graded Index Multimode Interference Devices", Proceedings of the IEEE Mediterranean Microwave Symposium MMS'2003, Cairo, Egypt, pp. 61-64, May 2003.
- 260- Tarek M. El-Basyouny, A. H. Morshed, and **Diaa Khalil**, "Suppression of spontaneous emission in 2-D photonic crystal structures based on effective modal refractive indices", Proceedings of the IEEE Mediterranean Microwave Symposium MMS'2003, Cairo, Egypt, pp. 65-68, May 2003.
- 261- **Diaa Khalil**, "Large signal analysis of Intensity Modulation Direct Detection IM-DD optical communication systems", Proceedings of the IEEE Mediterranean Microwave Symposium MMS'2003, Cairo, Egypt, pp. 248-251, May 2003.
- 262- Tarek Mamdouh and **Diaa Khalil**, "A New MEMS Based Tunable Optical Filter Ring Resonator, Proceedings of the IEEE Mediterranean Microwave Symposium MMS'2003, Cairo, Egypt, pp. 262-265, May 2003
- 263- M. S. Mahmoud, **D. A. M. Khalil**, M. Elhagery, and M. Badr, "Improvement of the comb drive actuator transient response using a digital compensation technique", URSI, 27<sup>th</sup> General Assembly, Amsterdam, August 2002.
- 264- **Diaa Khalil**, "Reflection at the end of strongly guiding dielectric waveguide", 7<sup>th</sup> Optoelectronics and Communications Conference OECC 2002, Pacifico Yokohama, Japan, 8-12 July, 2002.
- 265- Ayman Yehya and **Diaa Khalil**, "Analysis of 2D Multimode Interference Structures", WFOPC 2002, IEEE/LEOS Workshop on Fibre and Optical Passive Components, Glasgow, U.K., 5-6 June, 2002.
- 266- M. S. Mahmoud, **D. A. M. Khalil**, M. Elhagery, and M. Badr, "Digital compensation technique for the improvement of the comb drive actuator transient response", DTIP2002, Design, Test, Integration and Packaging of MEMS/MOEMS, Cannes, France, 6-8 May 2002.
- 267- Ahmed H. Morshed and **Diaa Khalil**, "Fabrication and characterization of optical surface and buried waveguides made by ion exchange on glass", 11<sup>th</sup> MELECON, Cairo-Egypt, 7-9 May 2002.
- 268- Bassam Saadany, and **Diaa Khalil**, "Integrating optical wave simulation into Microsystems CAD tools", DTIP2001, Design, Test, Integration and Packaging of MEMS/MOEMS, Cannes, France, April, 2001.
- 269- B. Saadany and **D. Khalil**, "Modeling of integrated optical components using a hardware description language", 1999 IEEE/ACM International Workshop on Behavioral Modeling and Simulation (BMAS'99), USA, 4-6 October 1999.
- 270- Salwa El-Sabban, **Diaa Khalil**, Isabell Schanen, Pierre Benech and Smail Tedjini, "Design of an Integrated Optical Magic T Using the Multimode Interference Phenomena", SPIE international symposium, Photonics west, Optoelectronics '99, USA 1999.
- 271- Smail TEDJINI, **Diaa Khalil**, and Christian SEASSAL, "CAD Models for Optical Integrated Circuits Using the Radiation Spectrum Method (RSM) with Evanescent Modes", SPIE international symposium, Photonics west, Optoelectronics '99, USA 1999.
- 272- **Diaa Khalil**, Steven Ayling and John Marsh, "The Use of Pyrex with SiO<sub>2</sub> in Localising Quantum Well Intermixing For Optoelectronic Integration", International Conference in Microelectronics, ICM'96, Cairo Egypt, Dec. 1996.
- 273- **Diaa A. Khalil**, Tamer A. Amer and H. F. Ragaie, "The Weighted Index Beam Propagation Method WIBPM", the XXV<sup>th</sup> General Assembly of the URSI, 28 August- 5 Sept. Lille - France, 1996.
- 274- Pierre Benech and **Diaa Khalil**, "A rigorous spectral analysis of the prism coupling problem", 3<sup>rd</sup> Sino-French congress, Shanghai, 15 September 1995.
- 275- Smail Tedjini and **Diaa Khalil**, "On the microwave behavior of single mode optical components", URSI, Kyoto, Japan, September 1993.
- 276- Smail Tedjini and **Diaa Khalil**, "On the use of optical networks for performing microwave functions", 23<sup>rd</sup> European Microwave Conference, Madrid, Spain, 6-9 September 1993.
- 277- Smail Tedjini, **Diaa Khalil** and Anh Ho Quoc, "On the behavior of microwave signals in optical networks", IEEE-LEOS Summer topical meeting on Optical Microwave Interactions, California USA, July 19-21, 1993.

- 278- **Diaa A. M. Khalil**, Pierre Benech, and Smail Tedjini, "Asymmetric Excitement of Symmetric Monomode Y-Junction: The Radiation Mode Effects", IEEE MTT-S International Microwave Symposium Digest, Vol.1, pp. 441-444, 1992.
- 279- **Diaa A. M. Khalil** and Smail Tedjini, "A novel structure for electrooptic intensity modulators: The radiation mode modulator", SPIE's international symposium O/E aerospace sensing, Orlando, 20-24 April 1992.
- 280- **D. Khalil** and S. Tedjini, "Radiation modes in integrated optic discontinuities", Proc. of the 11th European Symposium on optoelectronics, OPTO91, pp. 416-421, ESI publications, Paris 26-28 March 1991.
- 281- E. Pic, A. Kevorkian, **D. Khalil** and S. Tedjini, "Some applications on integrated optics on semiconductor", Colloque franco-chinois sur l'utilisation des fibres optiques, Shanghai, November 1991.
- 282- **Diaa Khalil**, S. Tedjini, and G. Chartier, "A simple homodyne technique for the characterization of wideband optical detectors", Fiber Optics'90, P. McGeehin, Ed., SPIE Proceedings, Vol. 1314, pp. 38-44, 1990.

#### **IV- Refereed National Conferences:**

- 283- M Kilany, Z Ding, GA Adib, YM Sabry, CX Liu, and **D Khalil**, "Optical Fiber Filters Linewidth Enhancement Based on Erbium-doped Photonic Crystal Fiber Cavities", 38<sup>th</sup> National Radio Science Conference (NRSC), Mansoura University, 2021.
- 284- Rabab A. Shalaby, George Adib, Yasser M. Sabry, Michael Gad, and Diaa Khalil, "Silicon photonic coupled-ring resonator in nested configuration comprising different length scales," 2019 14th International Conference on Computer Engineering and Systems (ICCES), Cairo, Egypt, 2019, pp. 432-437, doi: 10.1109/ICCES48960.2019.9068163.
- 285- Michael M.Y.R. Riad, Yasser M. Sabry, and **Diaa Khalil**, "On the Detection of Volatile Organic Compounds (VOCs) Using Machine Learning and FTIR Spectroscopy for Air Quality Monitoring", 36<sup>th</sup> National Radio Science Conference (NRSC), Port Said, Egypt, 16-18 April 2019.
- 286- Amr Ghonaim, Ashraf Mahmoud, Yasser Sabry, and **Diaa Khalil**, "Omnidirectional Optical MEMS Scanner Based on Two Degree-of-Freedom Translation of Acylindrical Micromirrors", 35<sup>th</sup> National Radio Science Conference (NRSC), Cairo, Egypt, March 2018 (**Best Paper Award**).
- 287- Aya Osama, Yasser Sabry, and **Diaa Khalil**, "Long Travel Range Thermal Actuator for Deeply Etched MEMS Components", 35<sup>th</sup> National Radio Science Conference (NRSC), Cairo, Egypt, March 2018.
- 288- Hoda Morshed, Yasser Sabry, Mohammad Sakr, and Diaa Khalil, "Optical MEMS Scale Multipass White Cell for Onchip Gas Sensing", 35<sup>th</sup> National Radio Science Conference (NRSC), Cairo, Egypt, March 2018.
- 289- Mariam Amr, Yasser Sabry, and **Diaa Khalil**, "Near-Infrared Optical MEMES Spectrometer-Based Quantification of Fat Concentration in Milk", 35<sup>th</sup> National Radio Science Conference (NRSC), Cairo, Egypt, March 2018.
- 290- Heba Shawki, Hussein Kothb, , and **Diaa Khalil**, "Narrow Line Width Dual Wavelength EDFA based Random Fiber Laser", 35<sup>th</sup> National Radio Science Conference (NRSC), Cairo, Egypt, March 2018
- 291- Yasser M. Sabry, **Diaa Khalil**; and Tarik Bourouina, "Distortion of Gaussian beams reflected off-axis on curved mirrors in the MEMS scale", 34<sup>th</sup> National Radio Science Conference (NRSC), Alexandria, Egypt, April 2017. (**Best paper award**).
- 292- Abdelrahman A. Maher; Mazen Erfan; Yasser M. Sabry; and **Diaa Khalil**, "Multimode spot-size converter for optical MEMS applications", 34<sup>th</sup> National Radio Science Conference (NRSC), Alexandria, Egypt, April 2017.
- 293- Mohamed N. Ali; Yasser M. Sabry; Frédéric Marty; Tarek Bourouina; **Diaa Khalil**; and Khaled A. Kirah, "Theoretical and experimental analysis of the fabrication tolerance on deeply etched silicon/air Bragg micromirrors", 34<sup>th</sup> National Radio Science Conference (NRSC), Alexandria, Egypt, April 2017.
- 294- Ahmed A. Elsayed, Mohammad Sakr, Mazen Erfan, Yasser M. Sabry and **Diaa Khalil**, "On the Environmental Gas Sensing Using MEMS FTIR Spectrometer in the Near-Infrared Region", Proceedings of the 33<sup>rd</sup> National Radio Science Conference (NRSC), pp 348-355, Aswan, Egypt, February 2016.
- 295- Ahmed Shebl, Ahmed M. Othman, Ashraf Mahmoud, George Albert, Yasser M. Sabry, Khaled Sharaf, and **Diaa Khalil**, "Ring laser gyroscope based on standard single-mode fiber and semiconductor optical amplifier", Proceedings of the 33<sup>rd</sup> National Radio Science Conference (NRSC), pp 368-375, Aswan, Egypt, February 2016.
- 296- George A. Adib, Ahmed Shebl, Yasser M. Sabry, and **Diaa Khalil**, "Beating signal power level improvement in ring lasers based on coupled ring resonators", Proceedings of the 33<sup>rd</sup> National Radio Science Conference (NRSC), pp 377-383, Aswan, Egypt, February 2016. (**Best Paper Award**).
- 297- M. Ragheb, H. El-Refaei, **D. Khalil** and O. Omar, "Design of InGaAsP/InP Compact Integrated Lyot Depolarizer", The 32<sup>nd</sup> National Radio Science Conference NRSC 2015, Cairo Egypt.
- 298- Y. Sabry, T. Bourouina and **D. Khalil**, "Optical coupling of cylindrical micromirrors in micro-optical benches", The 32<sup>nd</sup> National Radio Science Conference NRSC 2015, Cairo Egypt.
- 299- Y. Eltagoury, M. Soliman, M. Sadek, Y. Sabry and **D. Khalil**, "High frequency in-plane MEMS actuator", The 32<sup>nd</sup> National Radio Science Conference NRSC 2015, Cairo Egypt. (**Best Student Paper Award**)
- 300- Yasser Sabry, Haitham Omran, and **Diaa Khalil**, "Intrinsic Improvement of Diffraction-Limited Resolution in Optical MEMS Fourier-Transform Spectrometers", The 31<sup>th</sup> National Radio Science Conference NRSC 2014, Cairo Egypt. (**Best Paper Award** in the conference)

- 301- Noha H. Anous and **Diaa A. Khalil**, " DNG vs. SNG-based IR SPR Optical CO<sub>2</sub> Sensor Performance Evaluation under Gaussian Beam Excitation", The 31<sup>th</sup> National Radio Science Conference NRSC 2014, Cairo Egypt, April 2014.
- 302- Maurine Malak, Ahmed Hisham Morshed, **Diaa Khalil**, Khaled Hassan and Hanan Anis, "Design of Coupled Ring Resonator CWDM Multiplexers", The 26<sup>th</sup> Annual National Conference on Radio Science, URSI conference, Cairo, Egypt, 17-19 March 2009.
- 303- Marwa M. Ragheb, Hatem H. El-Refaei, **Diaa Khalil**, and Omar A. Omar, "Design of Automatic All-Power TE Polarizer on InGaAsP/ InP Over The C-band", The 26<sup>th</sup> Annual National Conference on Radio Science, URSI conference, Cairo, Egypt, 17-19 March 2009.
- 304- Tarek Badreldin and **Diaa Khalil**, "Monte Carlo Simulation of Photonic Band Gap Structures", The 2006 International Conference on MEMS, NANO and Smart Systems December 27-28, 2006, Cairo, Egypt.
- 305- B. Saadany, M. Malak , M. Kubota, F. Marty, Y. Mita, **D. Khalil**, and T. Bourouina, "A MEMS tuned Optical filter using Bragg Mirrors", Optical Communications and Optoelectronics Egyptian Workshop, OCOPE 2006, 14 June 2006, Cairo, Egypt.
- 306- G. Isaac and **D. Khalil**, "Hollow Waveguide Tapers as Spot Size Converters for Optical MEMS Applications", Optical Communications and Optoelectronics Egyptian Workshop, OCOPE 2006, 14 June 2006, Cairo, Egypt.
- 307- H. E. Kotb, A.E. Safwat, H. Boghdady and **D. Khalil**, "Towards an All Optical RF Opto-electronic oscillator", Optical Communications and Optoelectronics Egyptian Workshop, OCOPE 2006, 14 June 2006, Cairo, Egypt.
- 308- N. Safy El-Din and **D. Khalil**, "Effect of Birefringence on the Coupling Length of Integrated Directional Coupler", Optical Communications and Optoelectronics Egyptian Workshop, OCOPE 2006, 14 June 2006, Cairo, Egypt.
- 309- I.M. Nassar, H. El-Refaei, **D. Khalil**, and O. A. Omar Designing an Integrated Polarization Converter using a Genetic Algorithm", Optical Communications and Optoelectronics Egyptian Workshop, OCOPE 2006, 14 June 2006, Cairo, Egypt
- 310- M. Monir, H. El-Refaei, **D. Khalil** and O. A. Omar, "Refractive Index Profile Reconstruction for Single Mode Waveguide" Optical Communications and Optoelectronics Egyptian Workshop, OCOPE 2006, 14 June 2006, Cairo, Egypt.
- 311- M. M. Hassan , **D. Khalil** and M. Y. Ghannam, "Design and Implementation of a UV Optical Filter", Optical Communications and Optoelectronics Egyptian Workshop, OCOPE 2006, 14 June 2006, Cairo, Egypt.
- 312- T. Badreldin, T. Saad, and **D. Khalil**, "On the Monte Carlo simulation of optical MEMS components", International Conference on Electrical, Electronic and Computer Engineering ICEEC'04, Cairo- Egypt, September 5<sup>th</sup>-7<sup>th</sup>, 2004.
- 313- M. Swillam, A. Morshed, and **D. Khalil**, "Optimization of optical wide band 3-dB MMI splitter with graded-index side diffusions", International Conference on Electrical, Electronic and Computer Engineering ICEEC'04, Cairo- Egypt, September 5<sup>th</sup>-7<sup>th</sup>, 2004.
- 314- A. Yehia and **D. Khalil**, "Towards multilevel integrated optics: The two-dimensional multimode interference PHASAR", International Conference on Electrical, Electronic and Computer Engineering ICEEC'04, Cairo- Egypt, September 5<sup>th</sup>-7<sup>th</sup>, 2004.
- 315- Kareem Madkour, Hesham Maaty and **Diaa Khalil**, "Hollow waveguides for NxN optical cross connect switch", The 4<sup>th</sup> workshop on photonics and its applications, Cairo, Egypt, May 4, 2004.
- 316- **Diaa Khalil** and Ahmed H. Morshed, "Assembly and characterization of optical MEMS (Micro-Electro-Mechanical Systems)", Proceedings of the 3<sup>rd</sup> workshop on photonics and its applications at Egyptian engineering faculties and institutes, pp. 111-116, Cairo Egypt, 5 Jan. 2002.
- 317- H. Maaty, A. Bashir, B. Saadany and **D. Khalil**, "Modeling and characterization of a VOA with different shutter thickness", Proceedings of the 3<sup>rd</sup> workshop on photonics and its applications at Egyptian engineering faculties and institutes, pp. 117-122, Cairo Egypt, 5 Jan. 2002.
- 318- **Diaa Khalil** and Smail Tedjini, "Teaching laser dynamics and optical communication systems using standard system simulator", Proceedings of the 2<sup>nd</sup> workshop on teaching photonics at egyptian engineering faculties and institutes, pp- 55-62, Cairo Egypt, 24 Oct. 2000.
- 319- **Diaa Khalil** and Smail Tedjini, "Reflexion a la sortie d'un guide optique dielectrique", 19<sup>ème</sup> Journées Nationales d'Optique Guidée JNOG 99, Limoges, 6-8 December 1999.
- 320- Jacquin, P. Benech, **D. Khalil**, and A. Trouillet, "Pertes par diffractions dans un crystal photonique 1D", 18<sup>ème</sup> Journées Nationales d'Optique Guidée JNOG 98, Marly-Le-Roi, 26-28 octobre 1998.
- 321- **Diaa Khalil**, Christian Seassal and Smail Tedjini, "Utilisation des modes évanescents pour la conception de circuits intégrés photonique - Partie I : modélisation électromagnétique", Workshop on "the Global Simulators", Chapitre IEEE - MTT - ED, La Rochelle - France, 27-28 Mai 1998.
- 322- Christian Seassal, **Diaa Khalil** and Smail Tedjini, "Utilisation des modes évanescents pour la conception de circuits intégrés photonique - Partie II: Simulation de circuits", Workshop on "the Global Simulators", Chapitre IEEE - MTT - ED, La Rochelle - France, 27-28 Mai 1998.



- 323- Tamer A. Amer, M.Y. Shalaby and **Diaa A. Khalil**, “A comparative study of circular optical guides using two beam propagation techniques”, Second International conference in laser science and applications, Cairo, Egypt, 16-19 Sept., 1996.
- 324- Hatem Elrefai and **Diaa A. M. Khalil**, “Rigorous modal analysis of multimode interference couplers”, Second International conference in laser science and applications, Cairo, Egypt, 16-19 Sept., 1996.
- 325- **Diaa A. Khalil**, Tamer A. Amer and H. F. Ragaie, “The Weighted Index Beam Propagation Method WIBPM”, Proceedings of the 13<sup>th</sup> URSI conference, Cairo, Egypt, 19-21 March, 1996.
- 326- **Diaa Khalil** and Smail Tedjini, "Les effets des modes rayonnés dans la jonction-Y monomode", Deuxieme Collégue Franco-Chinois sur la fibre optique, Grenoble, July 1993.
- 327- **Diaa Khalil**, S.Tedjini and P. Benech, "Effet de la longueur d'onde sur la division de puissance dans une jonction-Y monomode excitée de façon asymétrique", 13<sup>èmes</sup> Journées Nationales d'Optique Guidée JNOG93, Marseille, 26-27 May 1993.
- 328- **Diaa Khalil** and Smail Tedjini, "Une nouvelle structure pour la commutation électrooptique en utilisant le couplage cohérent de modes rayonnés", 4<sup>ème</sup> Journées Microelectronique et Optoelectronique III-V, La Grand Motte, 21-23 octobre 1992.
- 329- **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.
- 330- **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.
- 331- **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.
- 332- **Diaa Khalil** and S. Tedjini, "Etude de l'effet de la region transitoire dans les jonctions type "Y" par la BPM", 11<sup>ème</sup> Journées Nationales d'Optique Guidée JNOG90, Grenoble, 17-19 October 1990.
- 333- **Diaa A. Khalil** and H. F. Ragaie, "Computer Aided Characterization for solar cells", 10<sup>th</sup> International congress for statistics and computer science research in Cairo, April 1985.

#### ***V- International Invited Talks [Total 15]:***

- 334- **Diaa Khalil**, “Optical Rotation Sensors: Challenges and Opportunities”, ASAT 2021, The 19<sup>th</sup> International Conference on Aerospace Sciences & Aviation Technology (ASAT-19), MTC, Cairo Egypt. 6-8 April 2021.
- 335- **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.
- 336- **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.
- 337- **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.
- 338- **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.
- 339- **Diaa Khalil**, “MEMS Based Gas Sensing: Challenges and Potential”, **Keynote Speech** at the Japan Africa Conference JAC-ECC, Alexandria Egypt, 18-20 Dec. 2017.
- 340- **Diaa Khalil**, “A MEMS Spectral Sensor for the IoT Development”, **KeyNote Speech** at ICaTAS 2016 & MJIC 2016, Malaysia 2016.
- 341- **Diaa Khalil**, “A MEMS FTIR Sensor for the IoT Applications”, **Keynote Speech** at the Japan Egypt Conference JEC-ECC, Cairo Egypt, 2016.
- 342- **Diaa Khalil**, “Optical MEMS for Biomedical Imaging: Potential and Challenges of Integrated OCT Head Module”, the 3<sup>rd</sup> Saudi International Nanotechnology Conference SINC 2014, Riyadh, Saudi Arabia, 1-3 Dec. 2014.
- 343- **Diaa Khalil**, “MEMS Interferometers for Biomedical Applications”, CIBEC 2012, the 6<sup>th</sup> Cairo International Conference on Biomedical Engineering, Cairo, Egypt, Dec.20-22, 2012
- 344- **Diaa Khalil**, “MEMS Spectrometer and Optical Coherence Tomography Module”, MECAP 12, 2<sup>nd</sup> Middle East Conference on Antennas and Propagation, AUC, Cairo Egypt, 29-31 Dec. 2012.
- 345- **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.

- 346- **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, 23<sup>rd</sup> - 26<sup>th</sup> April, 2011.
- 347- **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.
- 348- **Diaa Khalil**, “The Si Optical Bench Technology: Challenges and Opportunities”, Invited talk at the 6<sup>th</sup> International Symposium on “High-capacity Optical Networks & Enabling Technologies” (HONET’09), Alexandria, Egypt, Dec. 2009.

#### ***VI- National Invited Talks [Total 15]:***

- 349- **Diaa Khalil**, “Plasma Applications in MEMS Etching”, Plasma and Nuclear Fusion: Theory and Applications: EAEA & ASRT-NRSC, Cairo, Egypt, 3 Nov. 2020
- 350- **Diaa Khalil**, “MEMS Based Tunable Laser Source”, ILAS Conf., Cairo Egypt 2019.
- 351- **Diaa Khalil**, “ICT Smart Farming Applications: Smart Spectral Sensing Solutions S<sup>4</sup>”, 14<sup>th</sup> Scientific Conference for Agriculture Development Research, Faculty of Agriculture, ASU, Cairo Egypt, 2019.
- 352- **Diaa Khalil**, “A cell phone FTIR MEMS Spectrometer: Challenges and Opportunities”, Ain Shams University Conference, Cairo, Egypt 2018.
- 353- **Diaa Khalil**, “MEMS based Swept laser source for biomedical imaging”, **Keynote Speech** at the 34<sup>th</sup> NRSC, Alexandria, Egypt, April 2017.
- 354- **Diaa Khalil**, “The MEMS FTIR Spectrometer: An Optical IC to Analyze Everywhere”, **Keynote Speech** at the 33<sup>rd</sup> NRSC, Aswan, Egypt, Feb. 2016.
- 355- **Diaa Khalil**, “Towards an Integrated OCT MEMS based Module for Biomedical Imaging”, ICEAC 2015, Cairo, Egypt, March 2015.
- 356- **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 14<sup>th</sup> 2014.
- 357- **Diaa Khalil**, “Optical MEMS Devices: From Components to Integrated Micro- Systems”, Nano technology workshop, Mansura University, Mansura, Egypt, July 2012.
- 358- **Diaa Khalil**, “Silicon Integrated Micro Interferometers for Sensing Applications”, NRSC 2012, Cairo Egypt, April, 2012.
- 359- **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.
- 360- **Diaa Khalil**, Hussein E. Kotb, and Khalid Hassan, “Laser Diode Parameter Extraction”, 1<sup>st</sup> International workshop of lasers and plasmas”, Cairo, Egypt, March 2008.
- 361- **Diaa Khalil**, “Optical MEMS for telecommunication Applications”, US-Africa Materials Workshop, Cairo, Egypt, 14-15 December 2004.
- 362- **Diaa Khalil**, “Recent trends in Optical MEMS for telecommunication applications”, the 4<sup>th</sup> workshop on photonics and its applications, Cairo, Egypt, May 4, 2004.
- 363- **Diaa Khalil**, “Advances in optical filters”, the 2<sup>nd</sup> 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 Aljehkedab“, 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, 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, 2015-01-08.
- 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.