

## السيرة الذاتية / أ.د. عبدالهادي مطشر عبد



### المعلومات الشخصية

الاسم : عبدالهادي مطشر عبد

محل و تاريخ الميلاد : الحلة : ١٩٦٣/٩ /١

الحالة الزوجية : متزوج

التخصص : فيزياء الليزر

الوظيفة : استاذ / معهد الليزر للدراسات العليا - جامعة بغداد

الدرجة العلمية : استاذ

عنوان العمل : معهد الليزر للدراسات العليا - جامعة بغداد

البريد الإلكتروني : [hadi.janabi@ilps.uobaghdad.edu.iq](mailto:hadi.janabi@ilps.uobaghdad.edu.iq)

**A.Hadi Al-Janabi**

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[Scopus Author ID: 9738260300](https://scopus.com/authid/detail.uri?authorId=9738260300) R<sup>G</sup>: 19.65

<https://scholar.google.com/citations?user=KN6QBF8AAAAJ&hl=en>



أولاً : المؤهلات العلمية . ( Education )

التاريخ	الكلية	الجامعة	الدرجة العلمية
١٩٨١	العلوم-الفيزياء	الموصل	بكالوريوس
١٩٨٥	العلوم التطبيقية-الفيزياء التطبيقية	الجامعة التكنولوجية	الماجستير
١٩٩٣	مركز دراسات الطاقة	المعهد الهندي للتكنولوجيا-نيودلهي-الهند	الدكتوراه
٢٠٠٣-٢٠٠٤	معهد الفوتونيات	جامعة فيينا التكنولوجية-كلية الهندسة الكهربائية والمعلومات النمسا	أخرى-مابعد الدكتوراه

Title of Master Thesis

Effect of plasma on machining (hole drilling) by laser

Title of Ph.D. thesis

Wave-wave interactions studies at high powers of electromagnetic waves and electron beams in plasmas.

## المنح الدراسية

### Membership & Awards

Title	Type/Nature	Institution Name	Date
1-Indo-Iraqi cultural exchange program.	Scholarship (Ph.D)	Indian institute of Technology, Delhi ,India	1989-1993
2-Islamic development bank, merit scholarship program for high technology.	Scholarship (post.doc.)	Institute of photonics, Vienna university of technology, Vienna, Austria	2003-2004

## ثانياً : التدرج الوظيفي

ت	الوظيفة	الجهة	الفترة من – الى
١	مدرس	معهد الليزر للدراسات العليا-جامعة بغداد	١٩٩٨-١٩٩٥
٢	استاذ مساعد	معهد الليزر للدراسات العليا-جامعة بغداد	٢٠٠٥-١٩٩٨
٣	باحث علمي Research Assistant	جامعة فيينا التكنولوجية -النمسا	٢٠٠٤-٢٠٠٣
٤	استاذ	معهد الليزر للدراسات العليا-جامعة بغداد	٢٠٠٥-
٥	رئيس قسم	معهد الليزر للدراسات العليا-جامعة بغداد	٢٠٠٣-٢٠٠١
٦	مسؤول الوحدة العلمية	معهد الليزر للدراسات العليا-جامعة بغداد	٢٠١٤-٢٠١١
٧	عميد معهد الليزر للدراسات	جامعة بغداد	٢٠١٤-

## ثالثاً : التدريس الجامعي .

ت	الجهة (المعهد / الكلية)	الجامعة	الفترة من – الى
1	معهد الليزر للدراسات العليا	بغداد	١٩٩٥-
2	كلية الهندسة	بغداد	٢٠٠٠-١٩٩٧
3	كلية العلوم	بغداد	١٩٩٦

## رابعاً : المقررات الدراسية التي قمت بتدريسها.

ت	القسم	المادة	السنة
١	الفيزياء-كلية العلوم-جامعة	Plasma physics	1996
٢	الهندسة-جامعة بغداد	Laser -Plasma	1997-2000
٣	معهد الليزر-جامعة بغداد	Laser material interaction-ماجستير	1997-2001
٤	معهد الليزر-جامعة بغداد	Plasma physics-ماجستير	1996-2001

2001-2014	Laser-ماجستير	معهد الليزر-جامعة بغداد	٥
2001-2014	Laser applications—ماجستير	معهد الليزر-جامعة بغداد	٦
2004-2017	Laser Technology-Part I-دكتوراه	معهد الليزر-جامعة بغداد	٧
2004-2017	Laser Technology-Part II-دكتوراه	معهد الليزر-جامعة بغداد	٨
2010-2017	Photonic crystal fiber	معهد الليزر-جامعة بغداد	٩
2012	Laser material processing-دكتوراه	معهد الليزر-جامعة بغداد	١٠
2004	Ultra short laser pulses-ماجستير	معهد الليزر-جامعة بغداد	١١
2012-2015	Metamaterials-دكتوراه	معهد الليزر-جامعة بغداد	١٢
2014-2017	Trends in fiber laser /دكتوراه	معهد الليزر-جامعة بغداد	١٣

#### خامسا : الاشراف

#### ٤٠ رسالة ماجستير واطروحة دكتوراه

#### سادساً: المؤتمرات والندوات العلمية التي شارك فيها.

- 1-The effect of Nd:YAG laser in spot welding  
*LASER4 international conference, Paris,17-18 march 1988*
- 2-Effect of plasma on machining (hole drilling) by laser  
*Jordanian international conference of mechanical engineering ,JIMEC'97 , 1997.*
- 3-Laser microwelding of mild steel wires  
*7<sup>th</sup> International conference on Production engineering, Design and control. 13-15 Feb 2001,Alexandria univ. Egypt*
- 4-Effect of magnetic field on the plasma generated by Nd:glass laser.  
*8<sup>th</sup> technology conference for laser and opto-electronics. Univ. of technology, IRAQ , 2002.*
- 5-Transportation of nanosecond laser pulses by hollow core photonic crystal fibers  
*Presentation: 54. Jahrestagung der Österreichischen Physikalischen Gesellschaft, Linz, Austria; 09-28-2004.*



6-Photonik crystal fibers for practical applications

*Presentation: 13th International Laser Physics Workshop, Trieste, Italy; 07-12-2004 - 07-16-2004.*

7-Gaussian laser beam propagation through evacuated hollow core photonic crystal fiber

*Proceedings of 2005 7th International Conference Transparent Optical Networks, 2005. Volume 1 , pp 121-124. IEEE*

8-F-QEO1: Transportation of nanosecond laser pulses by hollow core photonic crystal fibers , 2005.

9-Laser ignition of engines: multipoint, fiber delivery, and diagnostics

*21st European Mask and Lithography Conference, 88-99 , 2005 .*

10-Transportation of Gaussian pulses via photonic bandgap fiber

*ICTON, Spain, 2006.*

11-Effect of temperature variation on the performance of liquid-filled photonic bandgap

*META10, 2010.*

12-Measurement of Nd:YAG laser breakdown threshold in gases.

*6<sup>th</sup> mediterranean symposium on laser induced plasma spectroscopy 11-15 september 2011*

13-Wire arrays fabricated by drawing for THz and IR metamaterials

*2012 37th International Conference on Infrared, Millimeter, and Terahertz . ,2012 ..*

14-Fiber-based metal-polymer composites for THz and IR metamaterials.

*ETOPIM9 Marseille, France , 2012*

15-Metal Wire Arrays Fabricated by Drawing for THz and IR Metamaterials (invited talk)

*IRMMW-THz, Wollongong,Australia 2012*

16-Comparison of thermally-induced single-mode regime changes in Yb-doped large mode area photonic crystal fibers

*SPIE Optics+ Optoelectronics, 87750N-87750N-7 2013 .*

17-PNA-modified photonic crystal fibers for DNA detection

*CLEO/ EUROPE-IQEC 2013 :12-16 May 2013, Munich Germany ;Conference on lasers and electro-optics – international quantum electronics conference*

18-Photonic platform based on functionalized microstructured fiber for DNA detection

*Second Workshop:Optical Biosensors and Biophotonics Group of the SIOF Sestri/Italy 2013*

19-"Nanoparticle enhanced fiber platform for biosensing applications," *EOS Topical Meetings,*

*12-14 September 2013, Capri, Italy*

20-Bio-functionalized hollow core photonic crystal fibers for label-free DNA detection  
*Proc. SPIE 8938, Optical Fibers and Sensors for Medical Diagnostics and Treatment Applications XIV, 89380T (February 20, 2014); doi:10.1117/12.2039665*

21-Subwavelength wire array metamaterial microwave and terahertz cavities  
proceeding for The Third Scientific Conference of Institute of Laser for Postgraduate Studies  
October 6th-7th 2015

22-Wire Metamaterials-Based Demultiplexers in Subwavelength Structure  
proceeding for The Third Scientific Conference of Institute of Laser for Postgraduate Studies  
October 6th-7th 2015

23-Fiber based biosensor for DNA detection  
*XXI national meeting of electromagnetism ,Sep. 2016 ,Parma ,Italy.*

24- Stability Evaluation of Passively Q-switched Erbium Doped Fiber Laser based on Double and Multi-Walled Carbon Nanotubes *Frontiers in Optics Laser Science Conference, 17-21 September, 2017 in Washington D.C., USA.*

سابعا : الأنشطة العلمية الاخرى .

خارج الكلية	داخل الكلية
عشرات رسائل ماجستير واطاريح دكتوراه تمت مناقشتها في مختلف الجامعات العراقية	ندوات ومؤتمرات سمنارات
تقويم علمي للبحوث	لجان (علمية+ترقيات+مجلة المعهد)
ترقيات علمية	امتحان شامل
امتحان شامل للدكتوراه	مناقشات رسائل واطاريح الماجستير والدكتوراه (اكثر من سبعون رسالة و اطروحة)

# Publications

# ثامنا: البحوث المنشورة

Note: I publish under the names : A.Hadi Al-Janabi , A H Al-Janabi OR Abdul Hadi M. Al-Janabi (some journals ask for full name) .

1-"Ultrashort pulse generation with an erbium-doped fiber laser ring cavity based on a copper oxide saturable absorber"

Sinan Abdulhameed Sadeq, Sulaiman Wadi Harun, and **Abdul Hadi Al-Janabi**

**Applied Optics 57(18), 5150-5160 (2018)**

<https://doi.org/10.1364/AO.57.005180>

2-Copper oxide (CuO) thin film nanoparticles as a new saturable absorber for passively switched erbium doped fiber laser.

Sinan Abdulhameed Sadeqa, Sarah Kadhim Al-Hayali, Sulaiman Wadi Harunc , **Abdulhadi Al-Janabia**

**Results in Physics 10 (2018) 264–269 (2018).**

<https://doi.org/10.1016/j.rinp.2018.06.006>

3- "Triple-wavelength passively Q-switched ytterbium-doped fiber laser using zinc oxide nanoparticles film as a saturable absorber."

SARAH KADHIM MOHSIN AL-HAYALI1, AND **ABDUL HADI AL-JANABI**

**Journal of Modern Optics 65(13) 15591564 (2018)**

<https://doi.org/10.1080/09500340.2018.1455922>

4--"Dual-wavelength passively Q-switched ytterbium-doped fiber laser using Fe<sub>3</sub>O<sub>4</sub>-nanoparticle saturable absorber and intracavity polarization"

S K M Al-Hayali and **A H Al-Janabi**

**Laser Physics 28, 035103 (2018).**

<https://doi.org/10.1088/1555-6611/aa9d6c>

5-" All fiber Chemical liquids Refractive index sensor based on Multimode interference. "

S. A. Mohammed and **Abdul H. Al-Janabi**

**Iraqi J. Laser ,Part A, Vol. 27 ,pp: 33-39 (2018).**

6- "Aluminum oxide nanoparticles saturable absorber for C-band passively Q-switched fiber laser."

Sarah Kadhim Mohsen Al-Hayali ,Dunya Zeki Mohammed, Wurood Abdulkhaliq Khalil and **Abdul Hadi Al-Janabi**

**Applied Optics 56 (16) 4720-4726 (2017).**

<https://doi.org/10.1364/AO.56.004720>

7- "High-sensitivity sucrose erbium-doped fiber ring laser sensor,"

Wurood Abdulkhaleq Khaleel and **Abdul Hadi M. Al-Janabi**

**Optical Engineering 56 (2), 026116-026116 (2017).**

[DOI: [10.1117/1.OE.56.2.026116](https://doi.org/10.1117/1.OE.56.2.026116)]



8-"Tunable Q-switched erbium doped fiber laser based on metal transition oxide saturable absorber and refractive index characteristic of multimode interference effect."

D.Z. Mohammeda., Wurood Abdulkhaleq Khaleel , **A.H. Al-Janabi**

**Optics and Laser Technology 97 ,106–110(2017).**

<http://dx.doi.org/10.1016/j.optlastec.2017.06.022>

9-Dual-Wavelength Passively Q-Switched Ytterbium-Doped Fiber Laser Based on Aluminum Oxide Nanoparticle Saturable Absorbers \*

S. K. M. Al-Hayali1, S. Selleri, **A. H. Al-Janabi**

**Chinese Physics Letters 34 (11), 114201 (2017).**

DOI: 10.1088/0256-307X/34/11/114201

10-"Erbium-doped fiber ring laser with wavelength selective filter based on nonlinear photonic crystal fiber Mach–Zehnder interferometer"

W A Khaleel and **A H Al-Janabi**

**Laser Physics 27, 105104 (8pp) (2017).**

<https://doi.org/10.1088/1555-6611/aa8287>

11-" Stability Evaluation of Passively Q-switched Erbium Doped Fiber Laser based on Double and Multi-Walled Carbon Nanotubes *Frontiers in Optics Laser Science Conference, 17-21 September, 2017 in Washington D.C., USA.*

12- "Investigation of Plateau–Rayleigh Instability in Drawn Metal–Polymer Composite Fibers for Metamaterials Fabrication "

Ahmed Alchalaby, Richard Lwin, **A. Hadi Al-Janabi**, Patrick W. Trimby, Simon C. Fleming, Boris T. Kuhlmeier, and Alexander Argyros

**Journal of Lightwave Technology 34 (9), 2198-2205 ,2016.**

Digital Object Identifier 10.1109/JLT.2015.2511022

13-"Passively Q-switched erbium doped fiber laser based on double walled carbon nanotubes-polyvinyl alcohol saturable absorber."

DZ Mohammed, **AH Al-Janabi**

**Laser Physics 26 (11), 115108 , 2016.**

[doi:10.1088/1054-660X/26/11/115108](https://doi.org/10.1088/1054-660X/26/11/115108)

14-Fiber based biosensor for DNA detection

*XXI national meeting of electromagnetism ,Sep. 2016 ,Parma ,Italy.*

15-" Study of Terahertz Generation in Magnetized Plasma Via Self Focused Ultra-Relativistic Laser Beam"

**IOSR Journal of Applied Physics (IOSR-JAP)**

**Volume 8, Issue 5 Ver. II (Sep - Oct. 2016), PP 37-45**

16-Subwavelength wire array metamaterial microwave and terahertz cavities

**proceeding for The Third Scientific Conference of Institute of Laser for Postgraduate Studies October 6th-7th 2015**

17-Wire Metamaterials-Based Demultiplexers in Subwavelength Structure



proceeding for **The Third Scientific Conference of Institute of Laser for Postgraduate Studies October 6th-7th 2015**

**18-**"DMSO-based photonic crystal fiber sensor with enhanced sensitivity".

Ali H. abdulhadi, Sun-jie Qiu, **A.Hadi Al-Janabi**

**Chinese Optics Letters 12 (2), 020603-020603 , 2014 .**

doi: 10.3788/COL201412.020603

**19-**"Fusion Splicing for a Large Mode Area Photonic Crystal Fiber with Conventional Single Mode Fiber"

Shaymaa N. Ismail Hanan J. Taher and **Abdul Hadi Al-Janabi**

**Iraqi J. Laser, Part A, Vol. 13, pp. 9-17 (2014)**

**20-**"Bio-functionalized hollow core photonic crystal fibers for label-free DNA detection"  
**SPIE BiOS, 89380T-89380T-8 ,2014 .**

**21-**"Refractive Index Scaling in Hollow Core Photonic Crystal Fiber."

*Iraqi J. Laser, Part A, Vol.12, pp. 15-25 (2013)*

**22-**"Indefinite Media Based on Wire Array Metamaterials for the THz and Mid-IR"

Osama T. Naman , Matthew R. New-Tolley , Richard Lwin , Alessandro Tuniz ,

**A. Hadi Al-Janabi** , Inna Karatchevtseva , Simon C. Fleming , Boris T. Kuhlmeiy ,  
and Alexander Argyros

**Advanced Optical Materials 1 (12), 971-977 , 2013**

**DOI: 10.1002/adom.201300402**

**23-**THz generation by the beating of two high intense laser beams

**Journal of Plasma Physics 79 (05), 657-660 , 2013 .**

**24-**Comparison of thermally-induced single-mode regime changes in Yb-doped large mode area photonic crystal fibers

**SPIE Optics+ Optoelectronics, 87750N-87750N-7 2013 .**

**25-**PNA-modified photonic crystal fibers for DNA detection

**CLEO/ EUROPE-IQEC 2013 :12-16 May 2013, Munich Germany ;Conference on lasers and electro-optics – international quantum electronics conference**

**26-**Photonic platform based on functionalized microstructured fiber for DNA detection

**Second Workshop:Optical Biosensors and Biophotonics Group of the SIOF Sestri/Italy 2013.**

**27-**Nanoparticle enhanced fiber platform for biosensing applications

**Invited paper Capri/ Italy , 2013, EOS Topical Meetings at Capri**

**28-**Wire arrays fabricated by drawing for THz and IR metamaterials

**37th International Conference on Infrared, Millimeter, and Terahertz . ,2012 ..**

**29-**Terahertz generation by the high intense laser beam

**Journal of Plasma Physics 78 (05), 553-558 , 2012 .**

**30-Fiber-based metal-polymer composites for THz and IR metamaterials.  
ETOPIM9 Marseille, France , 2012**

**31-Metal Wire Arrays Fabricated by Drawing for THz and IR Metamaterials (invited talk)  
IRMMW-THz,Wollongong,Australia 2012.**

**32-Efficient transportation of Nd laser beam through photonic crystal fiber  
Indian Journal of Physics 85 (8), 1299-1307 ,2011 .**

**33-Measurement of Nd:YAG laser breakdown threshold in gases.  
6<sup>th</sup> mediterranean symposium on laser induced plasma spectroscopy 11-15 september 2011.**

**34-Effect of temperature variation on the performance of liquid-filled photonic bandgap  
META10, 2010.**

**35-Transmission bands shift in a liquid filled hollow core photonic crystal fiber  
Atti della Fondazione Giorgio Ronchi, 301 , 2009.**

**36-Transportation of Gaussian pulses via photonic bandgap fiber  
ICTON, Spain, 2006.**

**37-Novel applications of short and ultra-short pulses  
Applied surface science 247 (1), 561-570 ,2005.**

**38-Transportation of nanosecond laser pulses by hollow core photonic crystal fiber for laser ignition  
Laser Physics Letters 2 (11), 529 ,2005.**

**39-Laser ignition of engines: multipoint, fiber delivery, and diagnostics  
21st European Mask and Lithography Conference, 88-99 , 2005 .**

**40-High power laser transmission through photonic band gap fibers  
Laser Physics Letters 2 (3), 137 ,2005 .**

**41-Gaussian laser beam propagation through evacuated hollow core photonic crystal fiber  
Transparent Optical Networks Proceedings of 2005 7th International , Spain**

**42-F-QEO1: Transportation of nanosecond laser pulses by hollow core photonic crystal fibers ,  
2005.**

**43-Photonic crystal fibers for practical applications  
Presentation: 13th International Laser Physics Workshop, Trieste, Italy; 07-12-2004 - 07-16-2004.**

**44-Transportation of nanosecond laser pulses by hollow core photonic crystal fibers  
Presentation: 54. Jahrestagung der Österreichischen Physikalischen Gesellschaft, Linz,  
Austria; 09-28-2004.**

45-Microdrop size measurements in a mixing unit using a laser technique.

**Iraqi J. Laser, Part A, Vol. 2, pp37-14, 2003.**

46-Study of laser propagation parameters in underdense plasma region using a two dimensional simulation code

**Iraqi J. Laser, Part A, Vol. 1, No.1,pp31-37 ,2002.**

47-Effect of magnetic field on the plasma generated by Nd:glass laser.

**8<sup>th</sup> technology conference for laser and opto-electronics. Univ. of technology, IRAQ , 2002.**

48-Velocity and kinetic energy measurements for the plasma ions produced by Nd:glass laser.

**Iraqi J.Sci.43C,No.1,p:113, 2002.**

49-Design and construction of a high energy Nd:glass laser system

**J. of College of Education for Women Vol.13(1),2002**

50-The conducting wall effect on single probe measurements",

**Indian J.Phys.75B(2),123-128 , 2001.**

51-Laser microwelding of mild steel wires

**7<sup>th</sup> International conference on Production engineering, Design and control. 13-15 Feb 2001,Alexandria univ. Egypt**

52-Bohm diffusion equation in quadrupole.

**Indian J.Phys. 73B(3), 509-514 , 1999**

53-The influence of self generated magnetic field on the growth rate of FRS instability in laser produced plasma

**Iraqi J.Sci , 1998**

54-Effect of plasma on machining (hole drilling) by laser

**Jordanian international conference of mechanical engineering ,JIMEC'97 , 1997.**

55-Study of the forward Raman scattering instability in laser produced plasma

**Iraqi J.Sci,Vol.37,No.1,223-233 ,1996.**

56-Microwelding of different types of wires using laser beam.

**Journal of science and technology, 1995.**

57-Generation of cyclotron harmonic waves in the ionospheric modification experiments

**IEEE TRANSACTIONS ON PLASMA SCIENCE, Vol.22, No.1,pp.65-70 , 1994 .**

58-Parametric excitation of electrostatic whistler waves by electron plasma waves

**Journal of Geophysical Research: Space Physics (1978–2012) 97 (A4), 4275-4281,1992.**

59-Some parametric instabilities of fast magnetosonic wave near the ion cyclotron harmonic frequencies

Phys.Fluids-B: Plasma Physics, Vol.4, No.1, pp.79-86 , 1992 .

60-Parametric decay instabilities of the fast wave in the lower hybrid frequency regime  
Plasma Science, IEEE Transactions on 19 (4), 590-597 , 1991 .

61-The effect of Nd:YAG laser in spot welding  
LASER4 international conference, Paris, 17-18 march 1988

## اللجان والجمعيات العلمية:

١- عضو جمعية البصريات الامريكية OSA

٢- رئيس اللجنة العلمية-معهد الليزر للدراسات العليا (٢٠١٠-٢٠١٤)

٣- عضو/رئيس لجنة الترقيات العلمية- معهد الليزر للدراسات العليا (٢٠٠٨-٢٠١٤)

٤- عضو لجنة التعضيد- معهد الليزر للدراسات العليا (٢٠٠٨-٢٠١٤)

٥- عضو المكتب الاستشاري/ رئيس المكتب الاستشاري- معهد الليزر للدراسات العليا  
(٢٠١٠-)

٦- عضو هيئة تحرير المجلة العراقية لليزر (٢٠٠٦-٢٠١٤)

٧- رئيس مجلس صندوق التعليم العالي (٢٠١٤-)

## التكريم:

تكريم يوم العلم ٢٠١١

تكريم يوم العلم ٢٠١٢

اكثر من عشرين كتاب شكر وتقدير من (عميد + رئيس جامعة + وزير)



الكتب المؤلفة :

## **OML Sheath Potential Ratio in a Plasma Quadrupole: Orbital Motion Limit (OML) -Sheath Potential Ratio in a Plasma Quadrupole.**

دار النشر:

- **Publisher:** LAMBERT Academic Publishing (July 27, 2012)
- **Language:** English
- **ISBN-10:** 3659195669
- **ISBN-13:** 978-3659195662

## **النشاطات العالمية:**

١-مقوم علمي للمجلات العلمية الصادرة عن جمعية البصرييات الامريكية والتي لها معامل استشهاد في حقل البصرييات والفوتونيات ضمن مستويات ثومسون رويتر وهي:

- 1-Optics letters
- 2-Applied optics
- 3-Optics express
- 4-Chinese optics letters
- 5-Optics and laser technology

## **Seminars and invited talks :**

- 1- High power fiber laser /Institute of laser-University of Baghdad.
- 2- Photonic Crystal fiber Applications /Institute of laser-University of Baghdad.
- 3- Scopus and Thomson Reuters comparison/Institute of laser-University of Baghdad.
- 4- Short and ultrashort laser pulses /Institute of laser-University of Baghdad.
- 5- THz technology and its applications / Al-Nahrain university, college of engineering.
- 6- Laser ignition /Institute of laser-University of Baghdad.
- 7- Metamaterials/ Institute of laser-University of Baghdad.
- 8- Nobel prizes in the field of lasers Institute of laser-University of Baghdad.
- 9-High power fiber laser.
- 10- Lasers got practical

## التعاون العلمى مع الجامعات العالمية

### **1-Prof. Alexander Argyros**

*Institute of Photonics and Optical Science (IPOS), School of Physics, The University of Sydney.*

*Joint research: Drawn meta-material for electric response in the mid IR.*

### **2- Prof. R.P.Sharma**

*Indian Institute of Technology, CES, India*

*Joint research: 1-THz generation by beating excitation of relativistic plasma.*

*2-Terahertz generation by the high intense laser beam in relativistic plasma*

### **3- Prof. Yanqing Lu**

*College of Engineering and Applied Sciences*

*Nanjing University, P. R. China.*

*Joint research: Photonic crystal fiber temperature and strain sensors.*

#### **4- Prof. Stefano Selleri**

*Dipartimento di Ingegneria dell'Informazione*

*Università degli Studi di Parma, Italy*

*Joint research: Liquid filled photonic crystal fiber*

#### **5- Prof. E.Wintner**

*Institute of photonics ,faculty of electrical engineering and information technology,*

*Vienna university of Technology, Austria*

اللغات : العربية + الانكليزية.

