

Faculté/Institut : Sciences de la Technologie

Département : Electronique

1- Identification du laboratoire/Unité de recherche		
مخبر مكروأنظمة و أجهزة إلكترونية		اسم المخبر
Intitulé du Laboratoire	Microsystèmes et Instrumentation	
Acronyme du labo	LMI	
Adresse électronique	lmi@umc.edu.dz	
Site web ou URL	http://www.umc.edu.dz	
Année d'Agrément :	2000	Tel : 213 (0) 31 81 89 90 Fax : 213 (0) 31 81 89 90

2- Directeur du laboratoire/Unité de recherche			
Nom & Prénom	SAHLI Salah		Grade : Professeur
Adresse Electronique	s.sahli@umc.edu.dz		
Nombre Equipes :	4	Nbre Chercheurs : Permanents: 32 (21 locaux + 11 associés) ; Doctorants : 27	Nbre Personnel soutien : 01

3- Présentation du laboratoire	
Thèmes mis en œuvres :	
Equipe 1 :	
<ul style="list-style-type: none">- Modélisation de nanosystèmes- Modélisation du fonctionnement de photodétecteurs- Élaboration et caractérisation de dispositifs à base de céramiques. <p>Dans cette thématique, deux volets sont explorés :</p> <ul style="list-style-type: none">* Élaboration de varistances à base d'oxyde de Zinc (ZnO)* Élaboration de capteurs en céramiques.	
Equipe 2 :	
<ul style="list-style-type: none">- Modélisation des différents processus intervenant dans un réacteur lors de traitement par plasmas froids (gravure, dépôt, ...) en vue de modéliser le réacteur plasma.- Élaboration par plasmas froids de matériaux pour la microélectronique et les biotechnologies.- Traitement de surfaces de matériaux par une décharge électrique (décharge couronne, plasmas sous vide, plasmas atmosphériques, ...).- Traitements de micro-organismes vivants (stérilisation et développement de procédés plasmas pour les biotechnologies).	
Equipe 3 :	
<ul style="list-style-type: none">- Modélisation de composants optique et optoélectroniques avec réseau de couplage- Etude des effets non linéaires électroniques pour la réalisation de photodétecteurs à seuil performants, recherche de la stabilité thermique des composants étudiés.	
Equipe 4 :	
<ul style="list-style-type: none">- Etude des phénomènes physiques à l'échelle micro et nanométrique dans les composants microélectronique- Etude de composants pour les microondes.- Elaboration de couches minces d'oxyde métallique par voie sol-gel.	
Mots-Clés :	

4- Chefs d'équipes		
Titre de l'Equipe1	Etude et modélisation de nanostructures et de dispositifs électroniques à base de matériaux céramiques	
Nom - Chef d'équipe ¹	HOBAR Farida	Grade : Professeur

.Titre de l'Equipe2	Élaboration et traitement de matériaux par plasma –Applications en électronique et biotechnologie	
Nom - Chef d'équipe ²	SAHLI Salah	Grade : Professeur
.Titre de l'Equipe3	Modélisation des composants optiques et optoélectroniques	
Nom - Chef d'équipe ³	BOUCHEMAT Mohamed	Grade : Professeur
.Titre de l'Equipe4	Étude de capteurs et modélisation de microsystèmes	
Nom - Chef d'équipe ⁴	TELIA Azzedine	Grade : Professeur

5-Liste des publications des dix (10) dernières années:

Publications Internationales :

- 1-H. Otmani, M. Bouchemat, T. Bouchemat, M. Lahoubi, S. Pu, R. Deghdak, "Magneto-optical properties of magnetic photonic crystal fiber of terbium gallium garnet filled with magnetic fluid", *Photonics and Nanostructures - Fundamentals and Applications*, 22 (2016) pp 24–28
<http://www.sciencedirect.com/science/article/pii/S1569441016300517>
 ISSN: 1569-4410
- 2-A.Benmerkhi, M.Bouchemat, T.Bouchemat " Influence of elliptical shaped holes on the sensitivity and Q factor in 2D photonic crystals sensor " *Photonics and Nanostructures - Fundamentals and Applications* , 20 (2016) pp 7– 17
<http://www.sciencedirect.com/science/article/pii/S1569441016300013>
 ISSN: 1569-4410
- 3-A.Benmerkhi, M.Bouchemat, T.Bouchemat "Improved sensitivity of the photonic crystal slab biosensors by using elliptical air holes", *Optik - International Journal for Light and Electron Optics*, 127(14) (2016) pp 5682–5687
<http://www.sciencedirect.com/science/article/pii/S0030402616302352>
 ISSN 0030-4026
- 4-B. Essedik Belkerk, A. Achour, D. Zhang, S. Sahli, M.A. Djouadi, Y.K. Yap « Thermal conductivity of vertically aligned boron nitride nanotubes”, *Applied Physics Express*, 9 (7) (2016) pp
 DOI: 10.7567/APEX.9.075002 <http://iopscience.iop.org/article/10.7567/APEX.9.075002/meta>
 ISSN: 1882-0786
- 5-S. Arafa, M.Bouchemat, T.Bouchemat, A.Benmerkhi "Design of Optical Filter Based on Photonic Crystal Squared Silicon Nitride Microcavity", *Nanoscience and Nanotechnology 2* vol.6, N°A1, p.97-104, January 2016
 DOI: 10.5923/c.nn.201601.19 <http://journal.sapub.org/nn>
 p-ISSN: 2163-257X e-ISSN: 2163-2588
- 6-R. Deghdak, M. Bouchemat, T. Bouchemat, M. Lahoubi, H. Otmani « Optimized Complete Photonic BandGap in Magneto-Photonic Crystal Slab,” *Nanoscience and Nanotechnology*, 6 (A1) (2016) pp.39-42
 DOI: 10.5923/c.nn.201601.07 <http://journal.sapub.org/nn>
 p-ISSN: 2163-257X e-ISSN: 2163-2588
- 7-D. Benelarbi, T. Bouchemat, M. Bouchemat "Silicon Photonic Crystal Nanocavity For Biosensing Application », *Nanoscience and Nanotechnology* 6(1A) (2016) pp. 105-109 DOI: 10.5923/c.nn.201601.20 <http://journal.sapub.org/nn>
 p-ISSN: 2163-257X e-ISSN: 2163-2588
- 8-R. Bendjelloul, T. Bouchemat, M.Bouchemat, A.Benmerkhi "New Design of T-Shaped Channel Drop Filter Based on Photonic Crystal Ring Resonator," *Nanoscience and Nanotechnology*, 6(A1) (2016)pp.13-17 DOI: 10.5923/c.nn.201601.02
<http://journal.sapub.org/nn>
 p-ISSN: 2163-257X e-ISSN: 2163-2588
- 9-A.Benmerkhi, M. Bouchemat, T. Bouchemat "Design of Photonic Crystal Demultiplexer for Optical Communication Application," *Nanoscience and Nanotechnology*, 6(A1) (2016)pp.29-34 DOI: 10.5923/c.nn.201601.05
<http://journal.sapub.org/nn>

10-Z. Mezache, S. Aib, F. Benabdelaziz, C. Zebiri "Modeling of a light pulse in bi-isotropic optical fiber with Kerr effect: case of Tellegen media », *Nonlinear Dynamics* 86 (2) (2016) pp 789-794
<http://link.springer.com/article/10.1007/s11071-016-2923-x>
ISSN: 0924-090X e-ISSN: 1573-269X

11-D. Sayad, F. Benabdelaziz, C. Zebiri, S. Daoudi, R.A. Abd-Alhameed "Spectral Domain Analysis of Gyrotropic Anisotropy Chiral Effect on the Input Impedance of a Printed Dipole Antenna »
Progress In Electromagnetics Research M, 51(2016) pp 1-8
<http://www.jpier.org/PIERM/pier.php?paper=16073106>
ISSN : 1937-8726

12-C. Zebiri, S. Daoudi, F. Benabdelaziz, M. Lashab, D. Sayad, N.T. Ali, R.A. Abd-Alhameed "Gyro-chirality effect of bianisotropic substrate on the operational of rectangular microstrip patch antenna"
International Journal of Applied Electromagnetics and Mechanics, 51(3) (2016) pp. 249-260
<http://content.iospress.com/articles/international-journal-of-applied-electromagnetics-and-mechanics/jae150141>
ISSN 1383-5416 e-ISSN: 1875-8800

13-A. Berkane, S.Rebiai, . F.Bouanaka, H.Bahouh, « Computational study of RF micro-hollow cathode discharge"
Physica Scripta 90 (6) (2015) 065
<http://iopscience.iop.org/article/10.1088/0031-8949/90/6/065602>
ISSN: 0031-8949

14-I. Nouicer, S. Sahli , M. Kihel , Z. Ziari, A. Bellel, P. Raynaud, « Superhydrophobic surface produced on polyimide and silicon by plasma enhanced chemical vapour deposition from hexamethyldisiloxane precursor"
Int. J. Nanotechnol., 12(8/9) (2015) 597- 607
ISSN : 1475-7435

15-O.C. Lezzar, A. Bellel, M. Boutamine, , S.Sahli, Y. Segui, P. Raynaud, "Improvement in gas selectivity of plasma coated quartz crystal microbalance sensors"
Sensor Letters 13(3) (2015) 259-266
ISSN : 1546-198X

16-A. Ikhlef, M. Kihel, B..Boukhezzar, A. Guerroudj, N. Mansouri, "Online temperature control system"
International Journal of Interactive Mobile Technologies 9 (2) (2015) pp. 22-25
ISSN: 18657923 Publisher: International Association of Online Engineering

17-S.Rebiai, S., N.E.H. Toudjen, S. Mouissat, "Implementation of online optoelectronic devices course and remote experiments in UC1 iLab", *International Journal of Interactive Mobile Technologies* , 9 (2) (2015) pp. 17-21
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18-M.R. Lebbal, T. Boumaza, M. Bouchemat « Analysis of birefringence in magneto-optical waveguides based on nanoparticles doped sol-gel matrix with an optimized substrate", *Journal of Magnetism and Magnetic Materials*, 373 (2015) pp 173–176
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19-L. Kassa- Baghdouche, T. Boumaza, M. Bouchemat « Planar photonic crystal nanocavities with symmetric cladding layers for integrated optics" *Optical Engineering* 53(12), 127107 (2015) SPIE
<http://spiedigitallibrary.org/> on 01/08/2015

20-L. Kassa- Baghdouche, T. Boumaza, M. Bouchemat « Optimization of Q-factor in nonlinear planar photonic crystal nanocavity incorporating hybrid silicon/polymer material " *Physica Scripta* 90(6) (2015) 065504. DOI:10.1088/0031-8949/90/6/065504
<http://iopscience.iop.org/article/10.1088/0031-8949/90/6/065504>

21-L. Kassa- Baghdouche, T. Boumaza, E Cassan, M. Bouchemat « Enhancement of Q-factor in SiN-based planar photonic crystal L3 nanocavity for integrated photonics in the visible-wavelength range" *Optik - International Journal for Light and Electron Optics* 126(22) (2015) pp 3467 - 3471. DOI:10.1016/j.ijleo.2015.07.150
<http://www.sciencedirect.com/science/article/pii/S0030402615007032>

22-H Otmani, M Bouchemat, T Bouchemat, M Lahoubi, W Wang, and S Pu "Nonreciprocal TE–TM Mode Conversion Based on Photonic Crystal Fiber of Air Holes Filled With Magnetic Fluid Into a Terbium Gallium Garnet Fiber"

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23-C. Zebiri, M. Lashab, F. Benabdelaziz, R. A. Abd-Alhameed and F. Elmegri, "A Grating Monopole Antenna on Metamaterial Using MSRR for DVB-T Application". In Applied Mechanics and Materials, Vol. 789, pp. 989-992, 2015. Trans Tech Publications.

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28-Sabah Benzeghda, F. Hoba, Didier Decoster, Jean-François Lampin « Limitations of the impulse response of GaAs MSM photoswitch" International Journal of Advances in Engineering and Technology, 7 (1) (2014) pp.75-81

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29-A.Benchiheb, F.Hobar "Modeling of the native oxide thickness effect on the electrical characteristics of polycrystalline emitters transistors" International Review of Physics, 8(2) (2014) pp33-37

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doi:10.1186/1556-276X-9-697

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31-Hanene Bahouh, Saida Rebiai, David Rochette, Damien Vacher and Michel Dudeck "Modelling of an inductively coupled plasma torch with argon at atmospheric pressure" Phys. Scr. T161 (2014) 014008

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32-M. Kihel , S. Sahli ,*, A. Zenasni , P. Raynaud , Y. Segui « Dielectric properties of SiO_x like films deposited from TMS/O₂ mixture in low pressure microwave plasma » Vacuum 107 (2014) 264-268

<http://dx.doi.org/10.1016/j.vacuum.2014.02.022>

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33-M.Boutamine, O.C.Lezzar, A.Bellel, S. Sahli,Y.Segui,P.Raynaud « Plasma polymerized highly hydrophobic Hexamethyldisiloxane layers: Investigation on the effect of monomer flow rate related to the film gas sensing properties », Key Engineering Materials Vol. 605 (2014) pp 275-278 doi:10.4028/www.scientific.net/KEM.605.275

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34-M. Boutamine, A. Bellel, S. Sahli, Y. Segui, P. Raynaud « Hexamethyldisiloxane thin films as sensitive coating for quartz

crystal microbalance based volatile organic compounds sensors », *Thin Solid Films* 552(3) (2014) pp 196-203

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35-Noubeil Guermat , Azzedine Bellel , Salah Sahli, Yvan Segui, Patrice Raynaud « Plasma Polymerization of Hexamethyldisiloxane and Tetraethoxysilane Thin Films for Humidity Sensing Application”, *Defect and Diffusion Forum Vol. 354* (2014) pp 41-47 doi:10.4028/www.scientific.net/DDF.354.41

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36-Douniazed Mezdoor, Jean-François Pilard, Mohamed Tabellout, Shoko Odake, Salah Sahli « Synthesis and Characterization of Conductive Composite Films of Polyisoprene/PA12@ PANI » *J. Appl. Polym. Sci.* (2014), 39833 doi: 10.1002/APP.39833

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39-Boukaous. C, Telia. A, Howart. D, Aida. MS, Boudine.B, Ghanem. S, “Influence of solvent on humidity sensing of sol-gel deposited ZnO thin films”, *European Physical Journal; Applied Physics*, Vol. 65, Issue 2, 2014, id.20302, 6 pp. DOI: 10.1051/epjap/2013130471

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40-F.Z. Baouche , F.Hobar, Y.Hervé, “High level modeling in optoelectronic systems: Transmission line application”, *Int. J. Adv. Eng. Technol.* 6, 2013, pp. 392-404, <http://www.e-ijaet.org/volume-6-issue-1.html#UqrqEE13vIV>

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41-S. Rebiaï, H. Bahouh, S. Sahli, «2-D Simulation of dual frequency capacitively coupled helium plasma, using COMSOL Multiphysics», *IEEE Trans. Electr. Insul*, 20(5) (2013) pp. 1616-1624, doi: 10.1109/TDEI.2013.6633691

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42-A.Hocini, A. Bouchelaghem, D. Saigaa, M. Bouras, T. Boumaza, M. Bouchemat “Birefringence properties of magneto-optic rib waveguide as a function of refractive index” *Journal of Computational Electronics* 12(1) (2013) pp 50-55

<http://link.springer.com/article/10.1007%2Fs10825-013-0435-1>

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43-C.-E. Zebiri, M. Lashab, F. Benabdelaziz, “Asymmetrical effects of bi-anisotropic substrate-superstrate sandwich structure on patch resonator” *Progress In Electromagnetics Research B*, Vol. 49 (2013) 319-337, doi:10.2528/PIERB13012115

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44-L. Benterrouche, S. Sahli, S.Rebiai, F.Z. Sebihi, A. Benhamouda, “Inactivation of E-coli bacteria by atmospheric dielectric barrier discharge” *Int. J. Nanotechnology*, Vol. 10, Nos. 5/6/7 (2013) pp543-552n DOI: 10.1504/IJNT.2013.053523 Inderscience Publishers

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45-M. Kaddeche, A. Telia, L. Semra, , A. Soltani “Analytical modeling and analysis of Al_mGa_{1-m}N/GaN HEMTs employing both field-plate and high-k dielectric stack for high-voltage operation” *Journal of Computational Electronics*, Volume 12, Issue 3, (2013) pp 501-510

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53-F. Bouanaka, S. Rebiai, «Effect of secondary electron emission on argon glow discharge characteristics», International Review of Physics (IREPHY), 7 (1) (2013) pp. 81-87

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55-A Benmerkhi, M Bouchemat, T Bouchemat and N Paraire" Efficient coupling between a high-Q cavity and a waveguide based on two-dimensional photonic crystal" Phys. Scr. T151 (2012) 014065 (4pp)

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60-H. Lidjici , M.Rguiti , F. Hobar , J-F.Trelcat, C. Courtois , A. Leriche "The effects of sintering temperature and poling condition on the piezoelectric properties of 0.935(Bi0.5 Na0.5) TiO3 -0.065BaTiO3 ceramics" Materials Science-Poland, 29(1) (2011) pp. 9-14. (doi: 10.2478/s13536-011-0001-0)
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61-Dounia zed Mezdoor, Mohamed Tabellout, Christele Vanga Bouanga and Salah Sahli "Dielectric and electrical properties investigation of polyamide/polyaniline composite films" Physica Status Solidi (c) 8 (11-12) (2011) pp 3103-3106
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