

Mahmoud Al Ahmad, Ph.D.

Assistant Professor, Senior IEEE Member

Nature scientific report editorial board member

Electrical Engineering Department
Faculty of Engineering
Building F1, Room # 1180
University of United Arab Emirates
Email: m.alahmad@uaeu.ac.ae
Mobile: 0503386481

Research objective interest:

To develop self-powered multipurpose smart sensors based system at the interface of different nano materials integrations for medical and environmental applications.

- ✓ Applied Electromagnetics
- ✓ Biomedical
- ✓ Device Engineering & Integration
- ✓ Energy harvesting
- ✓ RF Nano and Microsystems

Education

- ✓ B.A. Electrical Engineering, Birzeit University/West Bank, 1999.
- ✓ M.Sc. Microwave Engineering, Munich University of Technology/Germany, 2002.
- ✓ Ph.D. Electrical Engineering, Munich University of Technology/Germany, 2006.

Professional Experience:

- ✓ Assistant professor, UAEU, 21 August 2011-now
- ✓ Post-Doctoral, KAUST University/KSA, 02/10- 08/11
- ✓ Research Scientist, University of Texas /USA, 01/09- 12/09
- ✓ Research and Design Engineer, LAAS-CNRS/France, 09/06-01/09
- ✓ Post-Doctoral, IEMN-CNRS/France, 10/05-09/06
- ✓ Doctoral Research, Siemens AG/Germany, 11/02-10/05
- ✓ Working student, Munich University of Technology/Germany, 10/00-10/02

Clean room equipments: LTCC prototyping line (pinching, screen printing, laminations, sintering), thermal ovens, RTA, hot plates, spin coating, RF sputtering, ALD, Perylene coater, Denton evaporator for organic materials, lithography, mask writer, e-beam evaporator, wet etching, plasma dry etching, LPCVD, Dimatix material printer, plate coating.

Characterization tools: network analyzer, spectrum analyzers, oscilloscope, Keithley semiconductor, AFM, interferometry, XRD, Raman, FTIR, SEM, contact measurements, magnetic shaker.

Publications

Published Journals:

1. Development of nano-spherical RuO₂ active material on AISI 317 steel substrate via pulse electrodeposition for supercapacitors: R Arunachalam, RM Gnanamuthu, **M Al Ahmad**, S Mohan, RP Raj, Surface and Coatings Technology 276, 336-340, 2015. (IF 2014: **1.99**)
2. Label-Free Capacitance-Based Identification of Viruses: **M Al Ahmad**, F Mustafa, LM Ali, JV Karakkat, TA Rizvi; Nature Scientific reports 5, 2015. (IF 2014: **5.57**)
3. Non-invasive piezoelectric detection of heartbeat rate and blood pressure: N Al Taradeh, N Bastaki, I Saadat, **M Al Ahmad**; Electronics Letters 51 (6), 452-454, 2015. (IF 2014: **0.93**)
4. Electrochemical Influence of Nano-Spherical RuO₂. xH₂O Thin Film on Nickel Adhesion Layer as an Anode via Short-Time Pulse Current Technique for Energy Storage in Rechargeable Batteries: RM Gnanamuthu, S Mohan, **M Al Ahmad**, R Arunachalam, J Maharaja. Journal of The Electrochemical Society 162 (9), A1793-A1797, 2015. (IF 2014: **3.266**)
5. Virus detection and quantification using electrical parameters: **M Al Ahmad**, F Mustafa, LM Ali, TA Rizvi; Nature Scientific reports 4, 2014. (IF 2014: **5.57**)
6. RF Microalgal lipid content characterization: **M Al Ahmad**, S Al-Zuhair, H Taher, A Hilal-Alnaqbi; Nature Scientific reports 4, 2014. (IF 2014: **5.57**)
7. Piezoelectric Water Drop Energy Harvesting: **M Al Ahmad**, Journal of Electronic Materials, Journal of Electronic materials, 26 September 2013. (IF 2012: **1.635**)
8. Electronically droplet energy harvesting using piezoelectric cantilevers: **M Al Ahmad**, GE Jabbour, Journal of the Electronics letters, vol. 48, no. 11, pp.: 647 – 649, 2012 (IF: **1.038**)
9. Determination of maximum power transfer conditions of bimorph piezoelectric energy harvesters: **M Al Ahmad**, AM Elshurafa, KN Salama, HN Alshareef, Journal of Applied Physics, vol. 111, no. 10, pp.: 2812, 2012. (IF: **2.220**)
10. Energy harvesting from radio frequency propagation using piezoelectric cantilevers: **M Al Ahmad**, HN Alshareef, Journal of the Solid-State Electronics, vol. 68, pp.: 13-17, 2011. (IF: **1.482**)
11. Modeling of MEMS piezoelectric energy harvesters using electromagnetic and power system theories: **M Al Ahmad**, AM Elshurafa, KN Salama, HN Alshareef, Journal of the Smart Materials and Structures, vol. 20, no. 8, pp.:1-6, 2011. (IF: **2.024**)
12. Modeling the Power Output of Piezoelectric Energy Harvesters: **M Al Ahmad**, HN Alshareef. Journal of electronic materials,, vol. 40, no. 7, pp.: 1477-1484, 2011. (IF: **1.635**)
13. A Capacitance-Based Methodology for the Estimation of Piezoelectric Coefficients of Poled Piezoelectric Materials: **M Al Ahmad**, HN Alshareef, Journal of the Electrochemical and Solid-State Letters, vol. 13, no. 12, pp.:108-110, 2010. (IF: **2**)
14. Writing simple RF electronic devices on paper with carbon nanotube ink: M Dragoman, E Flahaut, D Dragoman, **M Al Ahmad**, R Plana, Journal of the Nanotechnology, vol. 20, no. 37, pp.: 1-6, 2009. (IF: **3.842**)
15. Multiple negative differential resistances in crossed carbon nanotubes: **M Al Ahmad**, D Dragoman, M Dragoman, R Plana, JH Ting, FY Huang, TL Li, Journal of applied physics, vol. 105, no. 11, pp.: 4303, 2009. (IF: **2.220**)
16. Macro PZT MEMS based wide-tunable coupled line resonator: **M Al Ahmad**, S Soulimane, R Plana, K van der Linden, M Riedel, Journal of the Microwave and Optical Technology Letters, vol. 51, no. 5, pp.: 1336-1338, 2009. (IF: **0.585**)
17. Bandpass filter modeling employing Lorentzian distribution: **M Al Ahmad**, G Papaioannou, R Plana, P Russer, Journal of the Microwave and Optical Technology Letters, vol. 51, no. 5, pp.: 1167-1169, 2009. (IF: **0.585**)

18. Modeling and characterization of smart LSMO ferromagnetic thin-film tunable resistance: **M Al Ahmad**, R Plana, CI Cheon, EJ Yun, Journal of the IEEE Transactions on Electron Devices, vol. 56, no. 4, pp.: 665-671, 2009. (IF: **2.062**)
19. Piezoelectric Coefficients of Thin Film Aluminum Nitride Characterizations Using Capacitance Measurements: **M Al Ahmad**, R Plana, Journal of the IEEE Microwave and Wireless Components Letters, vol. 19, no. 3, pp.:140-142, 2009. (IF: **1.784**)
20. Vertical displacement detection of an aluminum nitride piezoelectric thin film using capacitance measurements: **M Al Ahmad**, R Plana, Journal of the International Journal of Microwave and Wireless Technologies, vol. 1, no. 01, pp.:5-9, 2009. (IF: **1.784**)
21. Tunable LaSrMnO₃ (LSMO) Ferromagnetic Thin Films for Radio Frequency Applications: **M Al Ahmad**, YT Lee, CI Cheon, EJ Yun, R Plana, Journal of the IEEE Microwave and Wireless Components Letters, vol. 19, no. 1, pp.: 36-38, 2009. (IF: **1.784**)
22. Modeling of Lanthanum Strontium Manganite Ferromagnetic Thin Film Material Tunable Resistance: **M Al Ahmad**, EJ Yun, R Plana, Journal of the IEEE Electron Device Letters, vol. 29, no. 12, pp.:1296-1298, 2008. (IF: **2.789**)
23. Investigations of Indium Tin Oxide—Barium Strontium Titanate—Indium Tin Oxide Heterostructure for Tunability: **M Al Ahmad**, L Salvagnac, D Michau, M Maglione, R Plana, Journal of the IEEE Microwave and Wireless Components Letters, vol. 18, no. 6, pp.: 398-400, 2008. (IF: **1.784**)
24. Wide-tunable low-field interdigitated barium strontium titanate capacitors: **M Al Ahmad**, M Brunet, S Payan, D Michau, M Maglione, R Plana, Journal of the IEEE Microwave and Wireless Components Letters, vol. 17, no. 11, pp.: 769-771, 2007. (IF: **1.784**)

Submitted journals:

1. Visualization and determination of lipids distribution in a single microalgae cell: **M Al Ahmad** et al. submitted to BMC Cell Journal, under review since August 17 2015.
2. Single and mixed DNA nucleotides electrical characterization: **M Al Ahmad** et al. submitted to BMC Biophysics Journal, under review since October 4 2015.

Published Conferences:

1. Electromechanical analogy for d33 piezoelectric harvester power calculations: S Tawfiq and **M Al Ahmad**, Special session; ECCTD 2015, Norway.
2. Magnetic flux density computation in voltage-controlled lanthanum strontium manganite materials: **M Al Ahmad**; Applications of Ferroelectric, International Symposium on Integrated Ferroelectric 2015, Singapore.
3. Capacitance force piezoelectric extraction: **M Al Ahmad**, International Symposium on Integrated Ferroelectric 2015, Singapore.
4. Nanowires piezoelectric constants determination using current-voltage measurements: **M Al Ahmad**, N Al Taradeh, I Saadat, International Symposium on Integrated Ferroelectric 2015, Singapore.
5. Observations in ZnO thin films based pressure sensors: **M Al Ahmad**, N Al Taradeh; GCC Conference and Exhibition (GCCCE), 2015 IEEE 8th, 1-5.
6. Monitoring of microalgae lipid accumulation system overview: L Saqer, **M Al Ahmad**, H Taher, S Al-Zuhair, AH Al Naqbi; GCC Conference and Exhibition (GCCCE), 2015 IEEE 8th, 1-5.
7. RF Capacitive Piezoelectric Displacement Extraction: **M Al Ahmad**, to be presented ICST2013 in 03 of December 2013, New Zealand.
8. Exit Exam as Academic Indicator: **M Al Ahmad** and Ali Al Marzouqi, IEEE ICEEE, vol. 1, pp.: 224-228, Todz, Poland, 2013.
9. Piezoelectric energy droplet harvesting and modeling: T Alkhaddeim, B AlShujaa, W AlBeiey, F AlNeyadi, **M Al Ahmad**, IEEE Sensors conference, vol. 1, pp.: 1-4, Taipei/Taiwan, 2012.
10. RF devices written with carbon nanotube ink on paper: M Dragoman, D Dragoman, **M Al Ahmad**, R Plana, E Flahaut, European Microwave Conference, vol. 1, pp.: 575-577, Rome/Italy, 2009.

11. Design of carbon nanotubes based microwave applications employing mechanical resonance analysis: **M Al Ahmad**, WI Milne, R Plana, International Conference on Thermal, Mechanical and Multi-Physics Simulation and Experiments in Microelectronics and Micro-Systems, vol. 1, pp.:1-4 , Freiburg/Germany, 2008.
12. Thermo-electro-mechanical V-shaped actuator design and simulations: M Matmat, **M Al Ahmad**, C Escriba, S Soulimane, A Marty, J Fourniols, International Conference on Thermal, Mechanical and Multi-Physics Simulation and Experiments in Microelectronics and Micro-Systems, vol. 1, pp.:1-4 , Freiburg/Germany, 2008.
13. Tunability of Ferromagnetic (La, Sr) MnO₃ (LSMO) Thin Films for Microwave Applications: **M Al Ahmad**, EJ Yun, CI Cheon, R Plana, European Microwave Conference, vol. 1, pp.: 1296-1299, Amsterdam/Nederland, 2008.
14. Modeling of smart compliant electro-active polymer actuator: S Soulimane, **M Al Ahmad**, M Matmat, H Camon, International Conference on Thermal, Mechanical and Multi-Physics Simulation and Experiments in Microelectronics and Micro-Systems, vol. 1, pp.:1-4 , Freiburg/Germany, 2008.
15. Tuning of Barium Strontium Titanate (BST) Thin Film Materials Employing High Resistive Thin Indium Tin Oxide (ITO) Layer: **M Al Ahmad**, S Payan, D Michau, M Maglione, R Plana, European Microwave Conference, vol. 1, pp.: 809-812, Amsterdam/Nederland, 2008.
16. Tunable Thin Film Integrated Material Characterizations for Microwave Applications: **M Al Ahmad**, S Payan, D Michau, M Maglione, R Plana, MRS Proceedings, vol. 1075, San Francisco/US, 2008.
17. Piezoelectric Materials for Advanced Integrated RF Components: **M Al Ahmad**, F Coccetti, R Plana, MRS Proceedings, vol. 1075, San Francisco/US, 2008.
18. Losses Characterization of Tunable Barium Strontium Titanate Materials Integrated on Silicon Substrate: **M Al Ahmad**, R Plana, IEEE Silicon Monolithic Integrated Circuits in RF Systems, vol. 1, pp.:159-162, Orlando/US, 2008.
19. RF Nanoelectromechanical switch employing nanowires: **M Al Ahmad**, S Habtoun, C Bergaud, M Dilhan, D Bourrier, R Plana, International Semiconductor Device Research Symposium, vol. 1, pp.: 1-2, Maryland/US, 2007.
20. Metallic multiwalled carbon nanotubes for microwave applications: **M Al Ahmad**, A Tahraoui, WI Milne, R Plana, International Semiconductor Device Research Symposium, vol. 1, pp.: 1-2, Maryland/US, 2007.
21. Piezoelectric Thin Films Characterization for MEMS Applications: **M Al Ahmad**, R Plana, Asia-Pacific Microwave Conference, vol. 1, pp.:1-4, Bangkok/Thailand, 2007.
22. The Effect of Substrate Clamping on Piezoelectric Thin-Film Parameters: **M Al Ahmad**, F Coccetti, R Plana, Asia-Pacific Microwave Conference, vol. 1, pp.:1-4, Bangkok/Thailand, 2007.
23. Tunable low-field interdigitated barium strontium titanate capacitors: **M Al Ahmad**, G Leclerc, M Brunet, N Mauran, L Bary, R Plana, S Payan, Asia-Pacific Microwave Conference, vol. 1, pp.:1-4, Bangkok/Thailand, 2007.
24. RF MEMS status and perspectives: F Coccetti, D Peyrou, **M Al Ahmad**, V Puyal, P Pons, H Aubert, A Muller, M, Journal of the physica status solidi I, vol. 5, no. 12, pp.: 3822-3827, 2008.
25. Design to improve the capacitive contact quality in piezoelectric actuation: H Achkar, D Peyrou, F Pennec, **M Al Ahmad**, P Pons, R Plana, Journal of the physica status solidi(c), vol. 5, no. 12, pp.:3858-3861, 2008.
26. TCADMEMS Overview: D Peyrou, I Achkar, F Pennec, F Coccetti, **M Al Ahmad**, P Pons, R Plana, International Semiconductor Conference, vol. 1, pp.: 21-24, Sinaia, 2007.
27. Material depolarization, dielectric hysteresis and power consumption investigations on tunable piezoelectric-based shunt microstrip resonator: **M Al-Ahmad**, R Plana, European Microwave Conference, vol. 1, pp.: 294-297, Munich/Germany, 2007.
28. Advanced hybrid packaged piezoelectric actuated MEMS-based tunable voltage controlled oscillator: **M Al-Ahmad**, C Loyez, N Rolland, R Plana, PA Rolland, European Microwave Conference, vol. 1, pp.: 294-297, Munich/Germany, 2007.
29. A novel method for PZT thin film piezoelectric coefficients determination using conventional impedance analyzer: **M Al-Ahmad**, R Plana, European Microwave Conference, vol. 1, pp.: 294-297, Munich/Germany, 2007.

30. 0.8 GHz to 2.4 GHz tunable ceramic microwave bandpass filters: **M Al-Ahmad**, R Matz, P Russer, IEEE/MTT-S International Microwave Symposium, vol. 1, pp.: 1615-1618, Honolulu/Hawaii, 2007.
31. Validation of simulation platform by comparing results and calculation time of different softwares: H Achkar, F Pennec, D Peyrou, **M Al Ahmad**, M Sartor, R Plana, P Pons, International Conference on Thermal, Mechanical and Multi-Physics Simulation Experiments in Microelectronics and Micro-Systems, vol. 1, pp.: 1-5, London/UK, 2007.
32. Wide BST-based tuning of voltage controlled oscillator: **M Al-Ahmad**, C Loyez, N Rolland, PA Rolland, Asia-Pacific Microwave Conference, vol. 1, pp.: 468-471, Yokohama/Japan, 2006.
33. Piezoelectric-based tunable microstrip shunt resonator: **M Al-Ahmad**, N Rolland, PA Rolland, Asia-Pacific Microwave Conference, vol. 1, pp.: 653-656, Yokohama/Japan, 2006.
34. Piezoelectric Tuned LTCC Bandpass Filters: **M Al-Ahmad**, R Matz, P Russer, IEEE MTT-S International Microwave Symposium Digest, vol. 1, pp.: 764-767, San Francisco/US, 2006.
35. A piezoelectric tuned combline filter: **M Al Ahmad**, R Maenner, R Matz, P Russer, European Microwave Conference, vol. 1, pp. 1-4, Paris/France, 2005.
36. Wide piezoelectric tuning of LTCC bandpass filters: **M Al-Ahmad**, R Maenner, R Matz, P Russer, Microwave IEEE MTT-S International Symposium Digest, vol. 1, pp.: 1-4, Long Beach/US, 2005.
37. Parametric Model Generation Algorithm for Planar Microwave Structures based on Full-Wave analysis and Design of Experiment, **M. Al-Ahmad**, F. Coccetti, M. Tentzeris and P. Russer, Proc. of the 2003 ACES Conference, Monterey/US, 2003.

Participation into projects and research grants:

- ✓ NRF Industry-University Award “Nano Lab on a Chip for Virus Detection”, **Role: Principle Investigator**, 2011. (Budget: **150k AED**).
- ✓ E-smart technologies, Korea, Dr. Taimo Saito: Finger print sensor using flexible organic diode array, **Role: Research scientist**, Jan. 2009-Jan. 2010. (Budget: **5M USD**).
- ✓ Siemens AG/ Cooperate Technology, Munich-Germany (Oct. 2002-Oct. 2005), Ceramic Department, Microsystems and Manufactures led by Dr. Wolfgang Rossner. Topic: Design of Tunable Passive Microwave Components for Software Defined Radio, **Role: PhD student**, 2004-2005. (Budget: **1M Euro**).
- ✓ Project supported by the French Ministry of Industry on the Development of Piezoelectric-Based MEMS Binary-State Capacitors for Application to Reconfigurable RF Networks (SPRINT). Other 2 partners involved: CEA-LETI and Freescale (Tempe-USA, scientific coordinator), **Role: Research and Design Engineer**, (Sep. 2006-2009). (Budget: **5M USD**).
- ✓ Project FILIPIX: FILTERing for Innovative Payload with Improved flexibility, national project. Other 7 French organizations are involved, **Role: Research and Design Engineer**, March 2008. (Budget: **8M Euro**).
- ✓ ABSYS project: “development of advanced tunable microwave components using thin film barium strontium titanate”, **Role: Research and Design Engineer**, (Sep. 2006-2009). (Budget: **5M USD**).
- ✓ Collaboration with Professor Eui Jung Yun from the department of system and control engineering and department of semiconductor & display engineering, Hoseo University, South Korea. Topic: Tunable Ferromagnetic LSMO Thin Film for Radio Frequency and Microwave Applications, **Role: Research and Design Engineer** (Dec. 2007-Jan. 2009).
- ✓ Collaboration with Cambridge University, Department of Engineering Led by Professor William I. MILNE. Topic: Multiwalled Metallic Carbon Nanotubes for Microwave Applications **Role: Research and Design Engineer**.
- ✓ UAEU: project “Capacitive Piezoelectric Extraction”: **Role: PI**, 2012. (Budget: **30k AED**).
- ✓ Semiconductor research corporation (SRC): project “Multi-purpose Flexible ZnO- Sensors”: **Role: PI**, 2013-2017. (Budget: **600k USD**).
- ✓ Semiconductor research corporation (SRC): project “Integrated Thermal and Vibration Harvesters”: **Role: Co-PI**, 2013-2017. (Budget: **300k USD**).
- ✓ UAE ICTFund: project “Green Self-Powered Low Power Regulated Sensor Circuit”: **Role: PI**, 2015-2017. (Budget: **2.5M USD**).
- ✓ SQU-UAEU: project “Nano Enhanced Supercapacitor for Energy Storage”: **Role: PI**, 2013-2016. (Budget: **400k AED**).

- ✓ UAE ICT Fund-UAEU (Space center): project “Frequency-Agile Space Radio”: **Role: PI**, 2015-2018. (Budget: **2. M AED**).
- ✓ UAEU (Startup fund): project “Electrical Detection and Quantification of Liver Cell in Medium”: **Role: PI**, 2015-2018. (Budget: **500k AED**).
- ✓ UAEU (Sheikh Zayed Center): project “On-Chip Cancer Cells Characterization”: **Role: PI**, 2014-2017. , (Sep. 2006-2009). (Budget: **500k AED**).
- ✓ UAEU UPAR: project “Effective and Rapid Characterization of Microalgae Lipid Content using Radio Frequency Technique”: **Role: PI**, 2014-2017. (Budget: **500k AED**).

Supervision of students:

- 1) Currently supervising Leena Saqer in her M.Sc. Thesis.
- 2) Currently supervising Areen Lataifeh in her Ph.D. Thesis.
- 3) Currently co supervising Mr. Taryam Al Shamsi in his M.Sc. Thesis, from Masdar Institute.
- 4) Currently co supervising Mr. Ayman Rizik in his Ph.D. Thesis, from Masdar Institute.

Research team member:

- 1) Nedal Al Taradeh; M.Sc. In Electrical Engineering.
- 2) Jimsheena V.K.; PhD in Biochemistry.
- 3) Gnanamuthu Ramasamy, PhD in Chemical Engineering.
- 4) Leena Saqer, Bsc. In Electrical Engineering.
- 5) Shadi Tawfiq, Bsc. In Electrical Engineering.
- 6) Mayar Kamel, Bsc. In Electrical Engineering.
- 7) Shereen Hassan, M. Sc. In Chemical Engineering.
- 8) Reham Mahmoud Moh'd Milhem, Ph. D. In molecular Biology.
- 9) Areen Allataifeh, M.Sc. In Mechatronics Engineering.
- 10) Bisni Fahed, M.Sc. In Embedded Engineering.
- 11) Shaima Raja, M.Sc. in Biochemistry.

Scientific Collaboration with universities and industry:

- 1) Khalifa University: I am collaborating with Professor Mohammed Ismail AL Najjar in the SRC and ICT projects. Professor Ismail is FIEEE and he is expert in circuit design.
- 2) Masdar Institute of Technology: I am collaborating with Professor Irfan Saadat in the SRC and ICT projects. Professor Saadat is an expert in device engineering.
- 3) Bilkent University (UNAM): I am collaborating with Professor Ali Okay in the SRC and ICT projects. Professor Ali is an expert in device integration and process.
- 4) CSEM uae on the ICT funded project.
- 5) Microbiology and Biochemistry departments /college of medicine, UAE University: I am collaboration with Professor Tahir Rizvi and Dr Farah Mustafa towards the development of electrical based methods for quantification and identification of biotech molecules

Patents and patent applications:

- ✓ “Tunable filter arrangement, e.g. for cellular telephone, has conversion unit shifting input signal band so that effective frequency range is increased with output signal extending over larger band of frequencies than input signal”: **M Al Ahmad** and Richard Matz. German patent office, DE102004046859 (A1), April 2006.
- ✓ “CAPACITOR WITH A VARIABLE CAPACITANCE, METHOD FOR PRODUCING THE CAPACITOR AND USE THEREOF”: **M Al Ahmad** and Richard Matz. DE102005026203, WO2006131461, US2009091874, JP2008543099 and EP1889267.
- ✓ “Integrated Solar Cell and Capacitor Having a Common Electrode”: **M Al Ahmad** and Ghassan Jabbour, US – US/61540589, 2014.
- ✓ “Apparatus and Method for Energy Harvesting”: **M Al Ahmad** and Irfan Saadat, US - Patent Application No. 13/913,709, 2014.

- ✓ "Apparatus and method for detection and quantification of biological and chemical analytes", **Mahmoud Al Ahmad**, PCT /IB2014/064042, 2014.
- ✓ "Device For Providing Buoyancy", Al-Marzouqi, Ali, Al **Ahmad**, **Mahmoud**, Aldhaheeri, Shamsa , Al Ameri, Ghubaisha Slayem , Al Jabri, Maryam Abdullah, PCT/IB2014/064559, 2014.
- ✓ "RF Microalgal lipid content characterization", **Mahmoud Al Ahmad**, 62/002,883
- ✓ "Piezoelectric Thin-Film Based Flexible Sensing Device, Method For Fabrication Thereof And Method For Operating The Same": **Mahmoud Al Ahmad**, Irfan Saadat, Taryam Al Shamsi, 14/621,126, 2014.
- ✓ "Vibrational energy harvesting System", **Mahmoud Al Ahmad**, Baker Mohammed, US 14/537277, 2014.
- ✓ Apparatus and Method for Virus Detection: **Mahmoud Al Ahmad**, US/ 14/050,485, 2014.
- ✓ Thermoelectric device and method for fabrication therefore: **Mahmoud Al Ahmad**, US /14/26865, 2014.

Technical Skill-set & community services:

- ✓ Guest editor of the "International Journal of Microwave and Wireless Technologies" special issues detected to Piezoelectric materials and microwave applications, Cambridge University Press, 15 May 2009.
- ✓ Chair: Poster session, EuMC2009, Rome/Italy.
- ✓ Organizer: Design your own Microsystems, three training course, and microBUILDER Microfluidic Microsystems Manufacturing Cluster 2007, Toulouse/France.
- ✓ Senior IEEE member.
- ✓ Acting reviewer for the Journal of the Integrated Ferroelectrics, Journal of the IEEE Microwave and Components Letters, Journal of the IEEE Trans. of Microwave Theory and Techniques, Journal of the IEEE Transactions on Advanced Packaging, European Microwave Weeks, Journal of Progress In Electromagnetics Research (PIER), Journal of Materials Science, Journal of Materials Science and Engineering B, Journal of Applied Physics Letters, Journal of Microwave Magazine, Journal of Electronic Materials, Journal of IEEE Electron Device Letters, Nature scientific reports.
- ✓ Keynote presentation entitled with "Design of Carbon Nanotubes based Microwave Applications Employing Mechanical Resonance Analysis", IEEE International Conference on Thermal, Mechanical and Multi-Physics Simulation and Experiments in Microelectronics & Microsystems, April 2008.
- ✓ Invited talk, IEEE Electron Device Chapter, Texas/US "Modeling and Characterization of Smart LSMO Ferromagnetic Thin-Film Tunable Resistance", August 2009.
- ✓ Invited talk entitled with "RF MEMS: Status and Perspectives" presented at the Micro & Nano Conferences, Athens-Greece, 2007.
- ✓ Invited talk entitled with "RF MEMS: Status and Perspectives" presented at the Micro & Nano Conferences, Athens-Greece, 2007.
- ✓ Invited talk entitled with "MEMS/NEMS technologies for ambient intelligence", Electronics' 2007, Sozopol/Bulgaria, September 2007.
- ✓ Invited talk entitled with "TCADMEMS Overview" at the 2007 International Semiconductor Conference. CAS 2007, Sinaia/Romania, October 2007.
- ✓ Invited paper, "RF MEMS: status and perspectives", Journal of Physica Status Solidi C, Vol.5, N°12, pp.: 3822-3827, November 2008.
- ✓ Invited paper and Invited talk entitled with "Piezoelectric Materials for Advanced Integrated RF Components", MRS 2008, San Francisco, March 2008.
- ✓ Co-Supervision of different PhD and M.Sc. thesis at different universities and research centers.
- ✓ College of Engineering representative in training exams, AY 2011, 2012, 2013, 2014.
- ✓ College of Engineering representative in graduation project exams, AY 2011, 2012, 2013, 2014.
- ✓ Member of the organizing committee of the 3rd Engineering Students Renewable Energy Competition 2012, 2013.
- ✓ Member of the screening committee of faculty position in microelectronics, Spring 2012, Spring 2013.
- ✓ Member of the organizing committee of the Future UAE Energy and Environment Leaders, Spring 2012.
- ✓ Graduation project coordinator, Spring 2012, Fall 2012, Spring 2013, Fall 2013, Spring 2014, Fall 2014.
- ✓ Member of the Proctoring exam committee, Fall 2011.
- ✓ Member of the Editorial board of the Emirates Journal for Engineering Research.

- ✓ Textbook coordinators of the Electrical Engineering department, AY 2011/2012 and 2012/2013.
- ✓ Member of the Editorial Board of Nature Scientific Report Journal.
- ✓ EED safety coordinator, AY 2012-2014.
- ✓ COE college safety committee member, AY 2012-2014.
- ✓ Electronic circuits lab coordinator; AY 2012-2014.
- ✓ Head of Electronic Focus Group, AY 2012-2014.
- ✓ EED Exit exam coordinator, 2011, 2012, 2013, 2014.
- ✓ EED Outcomes Assessment committee member, AY 2014-2016.
- ✓ Graduate program committee member, AY 2014-2016.
- ✓ Member of the TPC of the ICST 2014. The ICST 2014, UK during September 2014.
- ✓ Member of the EED research committee, AY 2012-2013.
- ✓ EED Academic advisor, student batch AY 2010.
- ✓ International Committee member of 2014 International Conference on Computer Education and Economic Management, China.
- ✓ International Committee member of 2014 International Conference on Engineering Technology, Engineering Education and Engineering Management (ETEEEM 2014), China.
- ✓ International Committee member of 2014 International Conference on Future Engineering Technology and Management Science (FETMS 2014), China.
- ✓ International Committee member of 2014 International Symposium on Engineering Technology, Education and Management (ISETEM 2014), China.

Awards and Recognitions:

- 1) First place in the category of smart and safety systems, Think Science 2014: “smart protection vest’.
- 2) Grand Prize winner, Think Science 2014.
- 3) UAE NRF award,
- 4) ATIC SRC center award
- 5) ICT Fund award
- 6) Sheikh Zayed Health center award

List of References:

- 1) Professor Peter Russer, IEEE Fellow, PhD main Supervisor,
Munich University of Technology/Munich/Germany
Email: peter.russer@nano.ei.tum.de ;
- 2) Professor Yahia Antar, IEEE Fellow, Collaborator,
RMC, Kingston/Canada
Email: antar-y@rmc.ca ;
- 3) Professor Manos M. Tentzeris, IEEE Fellow, M. Sc. Thesis co-supervisor,
GeorgiaTech, Atlanta/US
Email: emmanouil.tentzeris@ece.gatech.edu
- 4) Professor Reyadh Al Mehaideb, Vice President of Zayed University
Former UAEU Dean of Engineering, Former UAEU Vice Provost of Research
Zayed University/Abu Dhabi/UAE
Email: Reyadh.ALMehaideb@zu.ac.ae ;
- 5) Professor Tahir Rizvi; Collaborator
UAE University/AI Ain/UAE
Email: tarizvi@uaeu.ac.ae ;