Abdullah Alodhayb
Associate Professor
Department of Physics and Astronomy, College of Science
King Saud University
Riyadh, Saudi Arabia

• Personal Information

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- **Google Scholar:** https://scholar.google.com/citations?hl=ar&user=KoTP3C8AAAAJ
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• Research Areas

- **MEMS based bioSensor Development**
- **Nanomechanical_ based IR sensors**
- **Radiation Dosimetry development**
- **Chemical Sensors**
- **Modeling and Computational analysis of microfluidic sensors (COMSOL, DFT)**
- **Energy Storage and Harvesting**

• Current Appointments

➢ **Associate Professor** **2021- present**
Department of Physics and Astronomy
King Saud University
Riyadh, Saudi Arabia

➢ **Director of Aramco Laboratory for Applied Sensing Research** **2018- present**
King Abdullah Institute for Nanotechnology
King Saud University
Riyadh, Saudi Arabia

➢ **External Affiliate** **2020- present**
Research and Education in University at Buffalo, The State University of New York,Buffalo NY, USA

• Professional Experience

- **Head of the Physical Group for Measurements** **2017- present**
  Saudi Standards, Quality and Metrology Organization
  Riyadh, Saudi Arabia

- **Member of the Supervising committee between KSU and GADD** **2023- present**

- **Member of the Consulting council for the physics department** **2022- present**
  Princess Nourah Bint Abdul Rahman University
  Riyadh, Saudi Arabia

- **Assistant Professor** **2017- 2021**
  Department of Physics and Astronomy
  King Saud University
  Riyadh, Saudi Arabia

- **Visiting Professor** **2019**
  Chemical and Biological Engineering,
  University at Buffalo, The State University of New York,
  Buffalo NY, USA

- **Visiting Professor** **2018**
  Mechanical and Manufacturing Engineering
  Schulich School of Engineering
  The University of Calgary, Canada

• Education

- **Memorial University of Newfoundland** || St. john's, Canada **2011- 2016**
  Ph.D, Condensed Matter Physics, Sensor group

- **Memorial University of Newfoundland** || St. john's, Canada **2009-2011**
  Master of Science (M.Sc.) in physics

- **King Saud University** || Riyadh, Saudi Arabia **2003-2007**
  Bachelor of Physics (B.Sc.)
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• U.S patents (3 issued and 2 pending)

1) Jayaswal, G., Hooda, M., Chaudhry, A., **Alodhayb, A**., Alrebdi, T. A., & Khouqeer, G. A. (2023). U.S. Patent No. 11,757,396. Washington, DC: U.S. Patent and Trademark Office.

2) **Alodhayb, A. N.,**(2020). Micromechanical photothermal spectroscopy (IR) system and method. US Patent, 10732048.

3) **Alodhayb, A. N., Albrithen, H. A., & Shamma, K. Z.** (2020). U.S. Patent No.10,871,580. Washington, DC: U.S. Patent and Trademark Office.

4) **Alodhayb, A. N, Nadyah Alanazi, and Muthu Ramamoorthy** . Quartz tuning forksensor based dosimetry for sensitive detection of gamma radiation. *Pending*
.

5) **Alodhayb, A. N** and Hamad Albrithen . Phase transition induced self-chargingbattery. *Pending*.

• Publications

1- Georghiou, P. E., Rahman, S., Valluru, G., Dawe, L. N., Rahman, S. S**.,** **Alodhayb, A. N**.,& Beaulieu, L. Y. (2013). Synthesis of an upper-and lower-rim functionalized calix [4] arene for detecting calcium ions using a microcantilever sensor. ***New Journal of Chemistry***, *37*(5), 1298-1301.

2- **Alodhayb, A**., Brown, N., Rahman, S. S., Harrigan, R., & Beaulieu, L. Y. (2013). Towards detecting the human immunodeficiency virus using microcantilever

sensors. *Applied Physics Letters*, *102*(17), 173106**.** ***[This paper was highlighted by the Group advances in Engineering (https://advanceseng.com)].***

3- Manning, K. Y., Butt, N. R., **Alodhayb, A**., Saika-Voivod, I., & Beaulieu, L. Y. (2013). Modeling the motion and detection of particles in microcantilever sensor cells. ***Journal of Applied Physics***, 113(11), 114501.

4- **Alodhayb, A**., Rahman, S. S., Rahman, S., Valluru, G. K., Georghiou, P. E., & Beaulieu, L. Y. (2014). Detection of calcium ions using gold-coated micro-cantilever sensors using upper-and lower-rim functionalized calix [4] arenes. ***Sensors and Actuators B: Chemical***, *203*, 766-773.

5- Valluru, G., Rahman, S., Georghiou, P. E., Dawe, L. N., **Alodhayb, A. N**., & Beaulieu, L. Y. (2014). Synthesis of a cone-conformer bimodal calix [4] arene-crown-5 which forms a sensitive cesium ion sensing layer on gold-coated microcantilevers. ***New Journal of Chemistry***, *38*(12), 5868-5872.

6- Rahman, S., Assiri, Y., **Alodhayb, A. N.,** Beaulieu, L. Y., Oraby, A. K., & Georghiou, P. E. (2015). Naphthyl "capped" triazole-linked calix [4] arene hosts as fluorescent chemosensors towards Fe^{3+} and Hg^{2+}: an experimental and DFT computational study. ***New Journal of Chemistry***.

7- **Alodhayb, A. N.,** Braim, M., Valluru, G., Beaulieu, L. Y., Rahman, S., Oraby, A. K., & Georghiou, P. E. (2015). Metal ion binding properties of a bimodal triazolyl-functionalized calix [4] arene on a multi-array microcantilever system. Synthesis, fluorescence and DFT computation studies. ***RSC Advances***.

8- **Alodhayb, A**., Rahman, S., Valluru, G. K., Georghiou, P. E., & Beaulieu, L. Y. (2016) A16-Microcantilever Array Sensing System for the Rapid and Simultaneous Detection of Analyte ***Sensors and Actuators B: Chemical***.

9- Georghiou, P. E., Rahman, S., **Alodhayb, A**., Nishimura, H., Lee, J., Wakamiya, A., & Scott, L. T. (2018). Calixazulenes: azulene-based calixarene analogues–an overview and recent supramolecular complexation studies. ***Beilstein Journal of Organic Chemistry***,

14(1), 2488-2494.

10- Tsui, H. C. L., Alsalman, O., **Alodhayb, A**., Albrithen, H., Hagan, D. E., Knights, A. P., ... & Crowe, I. F. (2019, March). Silicon'photonic molecules' for sensing applications (Conference Presentation). In Silicon Photonics XIV (Vol. 10923, p. 1092315). ***International Society for Optics and Photonics***.

11- Islam, M. M., Wang, C. Z., Feng, X., Rahman, S., Georghiou, P. E., **Alodhayb, A**., & Yamato, T. (2018). Synthesis, Structures and DFT Computational Studies of [3.1. 1] Metacyclophanes Containing Benzofuran Rings. ***ChemistrySelect***, 3(48), 13542-13547.

12- Islam, Md Monarul, Xing Feng, Shofiur Rahman, Paris E. Georghiou, Taisuke Matsumoto, Junji Tanaka, **Abdullah Alodhayb**, Carl Redshaw, and Takehiko Yamato."Synthesis, Structures and Lewis-Acid-Induced Isomerization of 8-Methoxy [2.2] metaparacyclophanes and a DFT Study." ***ChemistrySelect*** 4, no. 13 (2019): 3630-3635.

13- Rajeev, N., Swaroop, T.R., Anil, S.M., Kiran, K.R., Chandru, C., Georghiou, P.E., Alrawashdeh, A.I., Rahman, S., **Alodhayb, A**., Rangappa, K.S. and Sadashiva, M.P., 2019. Reaction of Arylmethyl Isocyanides/Arylmethyl-amines with Xanthate Esters: A Facile and Unexpected Synthesis of Carbamothioates. ***Beilstein Archives***, 2019(1), p.26.

14- Liu, Jun, Feifei Liu, Rima Bao, Keren Jiang, Faheem Khan, Zhi Li, Huihui Peng, James Chen, **Abdullah Alodhayb**, and Thomas Thundat. "Scaled-up Direct-Current Generation in MoS2 Multilayer-Based Moving Heterojunctions." ***ACS applied materials & interfaces***11, no. 38 (2019): 35404-35409.

15- Alamer, F. A., Badawi, N. M., **Alodhayb, A**., Okasha, R. M., & Kattan, N. A. Effect of dopant on the conductivity and stability of three different cotton fabrics impregnated with PEDOT: PSS. ***Cellulose***, 1-13.

16- **Alodhayb, A** (2020). Quartz tuning fork, a low-cost orthogonal measurement tool for the characterization of low-volume liquid reagents. ***Measurement***, 152, 107313.

17- **Alodhayb, A**., Khan, F., Etayash, H., & Thundat, T. (2020). Nanomechanical Calorimetric Infrared Spectroscopy using Bi-Material Microfluidic Cantilevers. ***Journalof The Electrochemical Society***, 167(3), 037504.

18- Tsui, H. L., Alsalman, O., Mao, B., **Alodhayb, A**., Albrithen, H., Knights, A. P., ... & Crowe, I. F. (2020). Graphene oxide integrated silicon photonics for detection of vapour phase volatile organic compounds. ***Scientific Reports***, 10(1), 1-11.

19- Monarul Islam, M., Feng, X., Wang, C. Z., Rahman, S., **Alodhayb, A**., Georghiou, P. E., ... & Yamato, T. (2020). Studies on Lewis-Acid Induced Reactions of 8-Methoxy [2.2] metacyclophanes: A New Synthetic Route to Alkylated Pyrenes. ***ChemistrySelect***, 5(4),

1269-1274.

20- Georghiou, P. E., Rahman, S., Alrawashdeh, A., **Alodhayb, A**., Valluru, G., Unikela, K. S., & Bodwell, G. J. (2020). Synthesis, supramolecular complexation and DFTstudies of a

bis (pyrene)-appended 'capped'triazole-linked calix [4] arene as Zn2+ and Cd2+ fluorescent chemosensors. ***Supramolecular Chemistry***, 32(5), 325-333.

21- Shamma, K., Aldwayyan, A., Albrithen, H., & **Alodhayb, A**. (2021). Exploiting the properties of TiO2 thin films as a sensing layer on (MEMS)-based sensors for radiation dosimetry applications. ***AIP Advances***, 11(2), 025209.

22- Al-Gawati, M. A., Alhazaa, **Alodhayb, A**, A. N., Albrithen, H. A., Shar, M. A., & Almutairi, Z. A. (2021). Controlling the fabrication of sub-microgrooves on a silicon surface using a femtosecond laser. ***Journal of King Saud University-Science***, 33(1), 101251.

23- Al-Gawati, M. A., Alhazaa, A., Albrithen, H., Alnofiay, J., & **Alodhayb, A**. (2020). Effectof surface patterning using femtosecond laser on micromechanical and structural properties of micromechanical sensors. ***Materials Research Express***, 7(8), 085904.

24- Alshammari, A., Aldosari, F., Qarmalah, N. B., Lsloum, A., Muthuramamoorthy, M., & **Alodhayb, A**. (2020). Detection of Chemical Host–Guest Interactions Using a Quartz Tuning Fork Sensing System. ***IEEE Sensors Journal***, 20(21), 12543-12551.

25- Hassanien, A. M., Atta, A. A., El-Nahass, M. M., Ahmed, S. I., Shaltout, A. A., Al- Baradi, A. M., ... & Kamal, A. M. (2020). Effect of annealing temperature on structural and optical properties of gallium oxide thin films deposited by RF-sputtering. ***Optical andQuantum Electronics***, 52(4), 1-16.

26- Hajesfandiari, A., Sukhotskiy, V., **Alodhayb, A**., Khan, F., Thundat, T., & Furlani, E. P. (2021). Microfluidic microcantilever as a sensitive platform to measure evaporation rateof picoliters of ethanol. ***Measurement***, 173, 108617.

27- **Alodhayb, A**. (2020). Modeling of an optically heated MEMS-based micromechanical bimaterial sensor for heat capacitance measurements of single biological cells. ***Sensors***, 20(1), 215.

28- Islam, M. M., Sharma, B., Rahman, S., **Alodhayb, A**., Georghiou, P. E., & Yamato, T. (2021). Synthesis, Structures and DFT Calculations of 9-Methoxy [3.3] metaparacyclophanes and their Lewis acid–catalyzed Reactivity. ***Journal of Molecular Structure***, 130334.

29- **Alodhayb, A**., Assaifan, A. K., Alzahrani, K. E., Ramamoorthy, M., Alkhammash, H. I., Pandiaraj, S., ... & Raghavan, V. (2021). Multi-walled carbon nanotube-based nanobiosensor for the detection of cadmium in water. ***Environmental Research***, 111148.

30- Assaifan, A. K., Hezam, M., Al-Gawati, M. A., Alzahrani, K. E., Alswieleh, A., Arunachalam, P., ... & Albrithen, H. (2021). Label-free and simple detection of trace Pb

(II) in tap water using non-faradaic impedimetric sensors. ***Sensors and Actuators A: Physical***, 329, 112833.

31- Dalal A Aloraini, Aljawhara H Almuqrin, Amal Alanazi, Qura Tul Ain, **Abdullah N Alodhayb**. (2021). Rapid Detection of Severe Acute Respiratory Syndrome Coronavirus 2 in Label-Free Manner Using Micromechanical Sensors. ***Sensors***

32- **Alodhayb, A**., Shamma, K., Alanazi, N., Alkathran, N., & Albrithen, H. (2021). Investigating the potential of using gold nanoparticle-functionalized micromechanical sensors for gamma radiation detection. ***Radiation Physics and Chemistry***, 189, 109745.

33- Yan, X., Rahman, S., Rostami, M., Tabasi, Z. A., Khan, F., **Alodhayb, A**., & Zhang, Y. (2021). Carbon Quantum Dot-Incorporated Chitosan Hydrogel for Selective Sensing of Hg2+ Ions: Synthesis, Characterization, and Density Functional Theory Calculation. ***ACSomega.***

34- Alzahrani, K. E., **Alodhayb, A**., Algwati, M., Alanazi, A. F., Ain, Q. T., Assaifan, A. K., ... & Albrithen, H. (2021). Nanomechanical Detection of Bacteria–Bacteriophage Interactions Using Microchannel Microcantilevers. ***Journal of The Electrochemical Society***, 168(8), 087509.

35- Georghiou, P. E., Rahman, S., Assiri, Y., Valluru, G. K., Menelaou, M., **Alodhayb, A**., ...& Beaulieu, L. (2021). Development of calix [4] arenes modified at their narrow-and wider-rims as potential metal ions sensor layers for microcantilever sensors: further studies. ***Canadian Journal of Chemistry***,

36- Rahman, S., Tomiyasu, H., Wang, C. Z., Georghiou, P. E., **Alodhayb, A**., Carpenter- Warren, C. L., ... & Yamato, T. (2021). Allosteric binding properties of a 1, 3-alternate thiacalix [4] arene-based receptor having phenylthiolurea and 2-pyridylmethyl moieties onopposite faces. ***New Journal of Chemistry***.

37- Nivetha, R., Gothandapani, K., Raghavan, V., Van Le, Q., Pitchaimuthu, S., Muthuramamoorty, M., **Alodhayb, A**., & Grace, A. N (2021).. Nano-MOF-5 (Zn) Derived Porous Carbon as Support Electrocatalyst for Hydrogen Evolution Reaction. ***ChemCatChem.***

38- Nivetha, R., Gothandapani, K., Raghavan, V., Jacob, G., Sellapan, R., Kannan, A. M., **Alodhayb, A**., & Grace, A. N. (2021). NH2-MIL-125 (Ti) doped CdS/Graphene composite as electro and photo catalyst in basic medium under light irradiation. ***Environmental Research***, 200, 111719.

39- **Alodhayb, A**., Meredov, A., & Dawar, P. (2021). A simulation study of multi-junction insulator tunnel diode for solar energy harvesting applications. ***Materials Research Express.***

40- Alanazi, N., **Alodhayb, A**. N., Almutairi, A., Alshehri, H., AlYemni, S., Alsowygh, G., ...& Almuqrin, A. H. (2021). Quartz Tuning Fork Sensor-Based Dosimetry for Sensitive

Detection of Gamma Radiation. ***Materials***, 14(22), 7035.

41- Pradeep, N., Selvi, G. T., Venkatraman, U., Van Le, Q., Jeong, S. K., Pandiaraj, S., **Alodhayb, A** & Grace, A. N. (2021). Development and investigation of the flexible hydrogen sensor based on ZnO-decorated Sb2O3 nanobelts. ***Materials Today Chemistry***,22, 100576.

42- Venkateshalu, S., Subashini, G., Bhardwaj, P., Jacob, G., Sellappan, R., Raghavan, V., **Alodhayb, A** & Grace, A. N. (2022). Phosphorene, antimonene, silicene and siloxene based novel 2D electrode materials for supercapacitors-A brief review. ***Journal of EnergyStorage***, 48, 104027.

43- Sajeev, A., Paul, A. M., Nivetha, R., Gothandapani, K., Gopal, T. S., Jacob, G., **Alodhayb, A** & Grace, A. N. (2022). Development of Cu3N electrocatalyst for hydrogenevolution reaction in alkaline medium. ***Scientific Reports***, 12(1), 1-13.

44- **Abdullah Alodhayb**. (2022). Measurement of polystyrene photodegradation rate using a quartz crystal microbalance. ***IET nanobiotechnology***.

45- Al-Gawati, M. A., Albrithen, H., Alhazaa, A. N., & **Alodhayb, A. N.** (2022). Sensitivity enhancement of microelectromechanical sensors using femtosecond laserfor biological and chemical applications. ***Surface and Interface Analysis***, 54(10), 1060-1069..

46- Shamma, K., Albrithen, H., & Alodhayb, A. (2022). Thickness dependence of the response of metal-dioxide-based micromechanical sensors for sensitive gamma-ray detection. ***Applied Radiation and Isotopes***, 186, 110225.

47- Shamma, K., Albrithen, H., AlOtaibi, B. S., & Alodhayb, A. (2022). Ultrasensitive detectionof low-dose gamma radiation using polymeric thin films on microelectromechanical system-based sensors. ***Journal of Nuclear Science and Technology***, 59(12), 1567-1575.

48- Shamma, K., Aldwayyan, A., Albrithen, H., & **Alodhayb, A**. (2022). Exploiting the properties of TiO2 thin films as a sensing layer on (MEMS)-based sensors for radiation dosimetry applications. ***Aip Advances***, 11(2), 025209.

49- Begum, M. S., Das, D., Zangrando, E., Rahman, S., **Alodhayb, A**., Begum, M. K., ... & Chowdhury, M. B. (2022). A dithiocarbazate N, S Schiff base ligand with a long alkyl chain: Synthesis, characterization, DFT study and antimicrobial activity of its Ni (II) complex. ***Journal of Molecular Structure***, 134808.

50- Alzahrani, K. E., Assaifan, A. K., Al-Gawati, M., Alswieleh, A. M., Albrithen, H., & **Alodhayb, A**. (2022). Microelectromechanical system-based biosensor for label-free detection of human cytomegalovirus. ***IET nanobiotechnology***.

51- Shamma, K., Albrithen, H., AlOtaibi, B. S., & **Alodhayb, A**. (2022). Ultrasensitive detectionof low-dose gamma radiation using polymeric thin films on microelectromechanical system- based sensors. ***Journal of Nuclear Science and Technology***, 59(12), 1567-1575.

52- Pradeep, N., selvi Gopal, T., Venkatraman, U., Pandiaraj, S., **Alodhayb, A**., ... & Grace, A. N. (2022). Effect of substrate bending towards chemiresistive based hydrogen gas sensor using ZnO-decorated MgO nanocubes. ***Materials Today Chemistry***, 26, 101200.

53- Gopal, T. S., Alzahrani, K. E., Assaifan, A. K., Albrithen, H., **Alodhayb, A**., Muthuramamoorthy, M., ... & Grace, A. N. (2022). Reduced graphene oxide supported MXene based metal oxide ternary composite electrodes for non-enzymatic glucose sensor applications. ***Scientific Reports***, 12(1), 1-15.

54- Albrithen, H., Alzahrani, K. E., Assaifan, A. K., Braim, M., Alshammari, A., & **Alodhayb, A**. (2022). Utilizing photothermally induced oscillation damping parameters for the determination of bacterial load suspended in microfluidic resonators. ***Journal of King Saud University-Science***, 34(5), 102090.

55- Alshammri, A., Alsaigh, R., Alzahrani, K. E., Assaifan, A. K., Albrithen, H., Braim, M., ... & **Alodhayb, A. N**. (2022). Quality Factor of a Microchannel Microresonator as a Function of Viscosity and Its Vibrational Mode: An Experimental and Computational Analysis. ***IEEE Sensors Journal***, 23(1), 104-110.

56- Dhiman, P., Sharma, G., **Alodhayb, A. N**., Kumar, A., Rana, G., Sithole, TA. (2022). Constructing a Visible-Active CoFe2O4@ Bi2O3/NiO Nanoheterojunction as Magnetically Recoverable Photocatalyst with Boosted Ofloxacin Degradation Efficiency. ***Molecules***, 27(23), 8234.

57- Assaifan, A. K., Aljdidalmri, A. S., Albrithen, H., **Alodhayb, A**., Alzahrani, K. E., Alshammari, A., ... & Aldeligan, S. H. (2022). Probing the Influence of Crosslinking Layer Incubation Time on the Performance of Non-Faradaic Impedimetric Biosensors. Journal of***The Electrochemical Society***, 169(11), 117511.

58- Alsaigh, R.A., Rahman, S., Alfaifi, F.S., Al-Gawati, M.A., Shallaa, R., Alzaid, F., Alanazi, A.F., Albrithen, H., Alzahrani, K.E., Assaifan, A.K. and **Alodhayb, A.N**., 2022. Detection ofVolatile Alcohol Vapors Using PMMA-Coated Micromechanical Sensors: Experimental andQuantum Chemical DFT Analysis. ***Chemosensors***, 10(11), p.452.

59- Alanazi, N., Alanazi, R., Akhdar, H., & **Alodhayb, A.** (2022). Monte Carlo model for evaluation of concentration of gold nanoparticle clusters as predictor of effective dose in proton therapy of microscopic tumors. ***AIP Advances***, 12(10), 105014.

60- Akhdar, H., Alanazi, R., Alanazi, N., & **Alodhayb, A**. (2022). Secondary Electrons in Gold Nanoparticle Clusters and Their Role in Therapeutic Ratio: The Outcome of a Monte Carlo Simulation Study. ***Molecules***, 27(16), 5290.

61- Sharma, G., Kumar, A., Kumar, P. S., **Alodhayb, A**., Dhiman, P., & Stadler, F. J. (2022). Carbon quantum dots embedded trimetallic oxide: Characterization and photocatalytic degradation of Ofloxacin. ***Journal of Water Process Engineering***, 48, 102853

62- Alanazi, N., Almutairi, M., Muthumareeswaran, M. R., & **Alodhayb, A**. (2022). Measurements of Ionizing Radiations Using Micromechanical Sensors. ***ECS Journal of Solid State Science and Technology***.

63- Sivakumar, N. K., Palaniyappan, S., Sekar, V., **Alodhayb, A.,** & Braim, M. (2023). An optimization approach for studying the effect of lattice unit cell's design-based factors on additively manufactured poly methyl methacrylate cranio-implant. ***Journal of the Mechanical Behavior of Biomedical Materials***, 105791.

64- Mishra, S., Khouqeer, G. A., Aamna, B., **Alodhayb, A**., Ibrahim, S. J. A., Hooda, M., & Jayaswal, G. (2023). A review: Recent advancements in sensor technology for non-invasive neonatal health monitoring. ***Biosensors and Bioelectronics: X***, 100332.

65- Karthikeyan, K., Kandasamy, S. K., Saravanan, P., & **Alodhayb, A**. (2023). Numerical simulation and parameter optimization of micromixer device using fuzzy logic technique. ***RSC advances***, 13(7), 4504-4522.

66- Rajasekaran, S. J., Grace, A. N., Jacob, G., **Alodhayb, A**., Pandiaraj, S., & Raghavan, V. (2023). Investigation of Different Aqueous Electrolytes for Biomass-Derived Activated Carbon-Based Supercapacitors. ***Catalysts***, 13(2), 286.

67- Soundarrajan, M., Alibrahim, K. A., Krishnamurthi, J., Maheswari, P., Harikrishnan, A., **Alodhayb, A.,** & Muthumareeswaran, M. R. (2023). Preparation, enhancement of permeability, and anti-biofouling properties of PEES/nano-silver/PVP mixed-matrix membrane. ***Materials Research Express.***

68- Suganthi, S., Alibrahim, K. A., Kumar, S. S., Saminathan, P., **Alodhayb, A**., Aneeba, B., ... & Muthumareeswaran, M. R. (2023). Finite element analysis of three-stage micro-sieves based microfiltration technique. ***Journal of King Saud University-Science***, 35(3), 102497.

69- Rahman, S., Al-Gawati, M. A., Alfaifi, F. S., Muthuramamoorthy, M., Alanazi, A. F., **Alodhayb, A**., ... & Georghiou, P. E. (2023). The Effect of Counterions on the Detection of Cu2+ Ions in Aqueous Solutions Using Quartz Tuning Fork (QTF) Sensors Modified with L-Cysteine Self-Assembled Monolayers: Experimental and Quantum Chemical DFT Study. ***Chemosensors***, 11(2), 88.

70- Begum, M. S., Das, D., Zangrando, E., Rahman, S., **Alodhayb, A**., Begum, M. K., ... & Chowdhury, M. B. (2023). A dithiocarbazate N, S Schiff base ligand with a long alkyl chain:

Synthesis, characterization, DFT study and antimicrobial activity of its Ni (II) complex. ***Journal of Molecular Structure***, 1277, 134808.

71- Alzahrani, K. E., Assaifan, A. K., Al-Gawati, M., Alswieleh, A. M., Albrithen, H., & **Alodhayb, A.** (2023). Microelectromechanical system-based biosensor for label-free detection of human cytomegalovirus. ***IET nanobiotechnology***, 17(1), 32-39.

72- Alanazi, N., Almutairi, M., & **Alodhayb, A. N**. (2023). A Review of Quartz Crystal Microbalance for Chemical and Biological Sensing Applications. ***Sensing and Imaging***, 24(1), 10.

73- Rajasekaran, S. J., Grace, A. N., Jacob, G., Alodhayb, A., Pandiaraj, S., & Raghavan, V. (2023). Investigation of different aqueous electrolytes for biomass-derived activated carbon-based supercapacitors. Catalysts, 13(2), 286.

74- Antić, Ž., Ćirić, A., Sekulić, M., Periša, J., Milićević, B., Alodhayb, A. N ,Dramićanin, M. D. (2023). Thirty-Fold Increase in Relative Sensitivity of Dy3+ Luminescent Boltzmann Thermometers Using Multiparameter and Multilevel Cascade Temperature Readings. Crystals, 13(6), 884.

75- Theodoropoulou, A., Gkika, D. A., Alodhayb, A., & Kyzas, G. Z. (2023). A critical evaluation of the safety datasheets of graphene materials. Journal of Nanoparticle Research, 25(5),

76- Alshammari, A., Abdulmawla, S. T., Alsaigh, R., Alarjani, K. M., Aldosari, N. S., Muthuramamoorthy, M., ... & **Alodhayb, A. N.** (2023). Toward the Real-Time and Rapid Quantification of Bacterial Cells Utilizing a Quartz Tuning Fork Sensor. Micromachines, 14(6), 1114.

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• Book Chapters

Book Title: Modelling of Chemical Process Systems

Chapter Contibution: Shofiur Rahman, Paris E. Georghiou and **Abdullah Alodhayb.** *Density functional theory (DFT) models for extraction of sulfur compounds from fuel by using ionic liquids*.

• Conferences

1- **Abdullah Alodhayb** and L.Y. Beaulieu. Development of Microcantilever Array Sensing System for the Rapid, Real Time and Simultaneous Detection of Metal Ions. **Summer Organic Chemistry Conference, Memorial University, St. Johns, Canada, Aug (2012)**

2- **Abdullah Alodhayb**, Nicole Brown, S. M. Saydur Rahman, Richard Harrigan, L.Y. Beaulieu. Towards Detecting the Human Immunodeficiency Virus (HIV) Using Microcantilever Sensors. . **The 10th International Workshop in Micromechanical Sensing. Stanford, San Francisco, USA, 1-3 May (2013)**

3- **Abdullah Alodhayb**, Georghiou , P.E., Rahman, S., Valluru , G., Dawe , L.N., Rahman , S.M.S., Alodhayb, Abdullah .N. Beaulieu , L.Y. Synthesis of an upper- and lower-rim functionalized calix[4]arene for detecting calcium ions using a microcantilever sensors. **The 13th International Conference in Calixarene. St.Johns, Canada, July (2013)**

4- **Abdullah Alodhayb**, S. M. Saydur Rahman, S. Rahman, G. K. Valluru, P. E. Georghiou and L.Y. Beaulieu. Detection of calcium ions using gold-coated micro-cantilever sensors using upper- and lower-rim functionalized calix[4]arenes. **The 11th International Workshop in Micromechanical Sensing. Madrid, Spain, 30 April -2 May (2014)**

5- **Abdullah Alodhayb** and L.Y. Beaulieu. Development of Microcantilever Array Sensing System for the Rapid, Real Time and Simultaneous Detection of Metal Ions. **Academic Achievement Exhibition, Ottawa, Canada, May (2015)**

6- Rosmi Abraham, Faheem Khan, **Abdullah Alodhayb**,Yeowon Yoon, Jungchul Lee and Thomas Thundat. Charge transport mechanisms in liquids and polymers investigated using Lorentz force. **The 15th International Workshop in Micromechanical Sensing. Seoul, South Korea, 26 June -29 June (2018)**

7- **Abdullah Alodhayb**. Sensitive and Rapid Detection of Analyte in Aqueous Solutions Using Gold-Coated Quartz Tuning Forks (QTFs). **Indo-US Virtual Workshop on Smart Sensors and Analytics for Clean Water (2021).**

8- Khalid Shamma, Hamad Albrithen, **Abdullah Alodhayb**. Metal Oxide Based Radiation Sensors. **The 17th International Workshop in Micromechanical Sensing. Calgary, Canada, 15 June -18 June (2021)**

9- F. Alnjiman, A. Almoshawa, **A. Alodhyb**, S. Diliberto, H. Kabbaraa, S. Bruyère, J. Ghanbaja , P. Boulet, H. Albrithin, J.F. Pierson. Investigations on the physio-chemical properties of ZnxMg1-xSnN2 thin films grown by reactive magnetron co-sputtering. **- MRS 2020 Spring Meeting. May 2020**

10- Alodhayb, A., Shamma, K., & Albrithen, H. (2021, October). Metal Oxide Based Micromechanical Sensors for Sensitive Gamma Rays Detection. **In ECS Meeting 56, p. 1670). IOP Publishing.**

- **Supervision**

1- **PhD Project: Asma Alshreem**:

Title: *Development of 3D printed biosensors for the sensing of glucose in biological fluids using MXenes*

2- **PhD Project: Khalid Shamma**:

Title: *Development of thin films as a sensing layer on (MEMS)-based sensors for radiation dosimetry applications* (Co-supervised with Dr. Hamad Albrithen)

3- PhD Project: Mahmoud Algawati

Title: *Surface modifications of micromechanical sensors by femtosecond laser to enhance detection of hazardous trace materials* (Co-supervised with Dr. Abdulaziz Alhazza)

4- PhD Project: Khalid Alzahrani

Title: *Nanomechanical Infrared Spectroscopy based on Micromechanical Sensors for the rapid Identification of DNA*

5- M.Sc project: Ahood Lasloum

Title: *An Ultrasensitive and Rapid Detection of Analyte in Aqueous Solutions Using Gold-Coated Quartz Tuning Forks*

6- M.Sc project: Aisha Almashaoah

Title: *Growth of ZnSnN2 thin films deposited by Sputter Deposition System under Thermal Controlled Condition* (Co-supervised with Dr. Hamad Albrithen)

7- M.Sc project: Nahid Alarifi

Title: *Determination of phase amounts in binary systems using Micromechanical sensors and Ellipsometry* (Co-supervised with Dr. Hamad Albrithen)

8- M.Sc project: Nouf Almahodi

Title: *Gamma rays dosimetry based on nanomechanical resonators using organic and inorganic perovskite materials: CH3NH3PbI3 and CsPbI3* (Co-supervised with Dr. Saad Aldawwod)

9- M.Sc project: Haya Alrashed

Title: *Modelling of MEMS based sensors* for the *detection of hazardous trace materials* using COMSOL Multiphysics

10- M.Sc project: Sami Algadan

Title: *Modelling of Thermoelectric Effects in Ternary Topological Insulating Materials (Bi1-X SbX)2Te3 by Composition Doping.*

• Grant Funds

- **Saudi Aramco (2017): $300000**
- **Department of Forensic, Ministry of Interior, Saudi Arabia (2021)**

• Honors and Awards

- **2023: Dean's Award for Excellence in Research, King Saud University**
- **2019: Prestigious Fulbright Scholar Fellowship, Department of States, USA**
- **2016: Fellow of the School of Graduate Studies, Memorial University, Canada**
- **2015: Graduate Teaching Assistant Award, Memorial University, Canada**
- **2015: Received an outstanding student award by the Saudi Cultural Bureau and was also invited to participate in the Academic Achievement Exhibition at the 2015 Graduation Ceremony in Ottawa, Canada**
- **2010-2015: Saudi Cultural Bureau's Award for Research Excellence (four times)**

- **International Journal Review Activities**

  - **IEEE sensors Journal**
  - **Sensors Journal**
  - **Journal of Magnetochemistry**
  - **Journal of Microsystems & Nanoengineering**

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