



## Curriculum Vitae

<b>Name</b>	Prof. Dr. Nor Azah Yusof			
<b>Staff No.</b>	A02457			
<b>I.C No.</b>	731024085280			
<b>Age</b>	46	Years		Month(s)
<b>Department / Laboratory</b>	Chemistry			
<b>Faculty/Institute/School/Academy</b>	Faculty of Science			
<b>Field of Specialization</b>	Analytical Chemistry, Bio/chemical sensor, Functional Material			
<b>Tel. No.</b>	Office	03-89466782	H/Set	0192421472
<b>E-mail</b>	azahy@upm.edu.my			

(Title of Project, Role, Amount, Year)

### H. PROJEK PENYELIDIKAN TERDAHULU *(Past Research Project)*

No	Institution	Title	Amount	Status
1	UPM short term grant (project leader))	Simultaneous Detection of Heavy Metal Employing an Optical Fibre Chemical Sensor and Artificial Neural Network	RM 10,000.00	Completed (2003-2005)
2.	UPM Fundamental grant (project leader))	Characterisation of complex between palm based hydroxamic acid and selected toxic metals	RM 35,000.00	Completed (2003-2005)
3.	IRPA, Government of Malaysia (project leader))	Simultaneous Detection of Heavy Metal Employing an Optical Fibre Chemical Sensor and Artificial Neural Network	RM 96,000.00	Completed (2003-2005)
4.	Science Fund (project leader))	Development Of Microarray, Based On Novel Nanotransducers For Metal Ion Sensors, Exploiting Amino Acids And Peptides As Recognition Elements	RM 168,160	Completed (2006-2008)
5.	Science Fund (project leader))	Fabrication Of Molecular Imprinted Polymer (MIP) For Waste Water Treatment	RM 121,080	Completed (2006-2008)
6.	Fundamental (project leader))	Studies on the interaction between monomers and toxic metals in fabrication of molecular imprinted polymer	RM 110,000	Completed (2006-2008)
7	UNESCO (TWAS) (project leader))	Development of hydrogel based molecular imprinted polymers for biomolecular recognition of protein and viruses	USD 5000	Completed (2008 – 2010)
8	Agri (Science Fund) (project leader))	Development of a DNA based nanosensor for early detection of <i>ganoderma boninense</i> , a pathogen of the oil palm	RM 170,000.00	Completed (2009-2011)
9	RUGS (project leader))	Development of rapid detection system for melamine and cyanuric acid based on optical,	RM 140,000.00	Completed (2009-2011)

		electrochemical and nanogap transducer system		
10	FRGS (project leader))	Study of molecular interaction between DNA and nanoparticle	RM 60,000	Completed (2009-2011)
11	ERGS (project leader)	Synthesis, characterization and application of functionalized natural fiber for heavy metal recovery and removal	RM 119,000	Completed (2011-2013)
12	NND (project leader))	Multifunctional nanofluidic biochip for dengue detection utilizing silicon nanostructure	RM 369,000	Completed (2011-2013)
13	Science Fund (project leader))	Portable heavy metal detector utilizing peptides as the recognition molecule	RM 265,000	Completed (2012-2014)
14	LRGS (project leader)	Investigation of enzymatic reaction as alternative cheaper, greener and practical method for FFA monitoring in extracted palm oil	RM 290,947	Active (2012-2017)
15	KTP (project leader)	Green and Renewable Sorbent for Mercury Cleanup in Petroleum Industries for Sustainable Malaysian Environment.	RM 134,685	Completed (2013-2015)
16	PRGS(project leader)	Development of Prototype for Metal Ion Sensor, Exploiting Peptides and Ionophore as Recognition Elements	RM 216000	Completed (2013-2015)
17	FRGS (Project Leader)	Study on novel chitosan based nanoimmunosensing probe for dual application sites of cancer cell diagnosis and controlled drug release	RM 100,000	Completed (2013-2015)
18	Putra Grant-IPB (Program Leader)	Affordable, ultrasensitive and non invasive detection system for mycobacterium tuberculosis for future decentralization healthcare services	RM 500,000	Completed (2013-2015)
19	Public Private Research Network (PPRN)	Waste water in oil and gas industry, requirement of below 15 ppm	RM 30,000	Completed 2015
20	NanoMite (Program Leader)	<b>Nanotechnology in detection and control of ganoderma boninense</b>	<b>RM 5,000,000.00</b>	<b>Active (2015-2020)</b>
21	PRGS (Project leader)	<b>ImprintSorb for rapid mercury removal adsorbent for liquid hydrocarbon streams</b>	<b>RM 127,000.00</b>	<b>Completed 2015-2017</b>
22	Science Fund (project leader)	<b>Immunobased biosensors system for ultrasensitive and non invasive detection system for mycobacterium tuberculosis for future home test kit</b>	<b>133,400</b>	<b>Completed 2015-2017</b>
23	International Grant Newton Fund (Project leader)	<b>Mobile based tools for an automated detection of tuberculosis</b>	<b>GBP £129,617.00</b>	<b>Active 2016-2018</b>
24	Industry Grant Nano Malaysia Berhad (Project Leader)	<b>Development of nanofiber based biosensors system for ultrasensitive, non invasive and affordable detection of mycobacterium tuberculosis (TB)</b>	<b>RM 200,000.00</b>	<b>Completed 2016</b>
25	GeranInnohub	<b>Imprintorb super adsorbent</b>	<b>RM 95000</b>	<b>Completed 2015-2017</b>
26	Consultation Nano Malaysia Berhad (Project Leader)	<b>Clinical validation of nanofiber modified platform technology detection system for tuberculosis bacteria</b>	<b>RM 25,000</b>	<b>Completed 2017</b>

27	Geran Putra-IPS (Project Leader)	Development of Electrochemical Biosensor Based on Silicon Nanowires/Platinum Nanoparticles Modified SPCE for Detection of Porcine DNA and Protein in Food	RM 20,000	Active 2017-2019
28	Geran Putra-IPS (Project Leader)	Electrochemical Immunosensor for Ultrasensitive, Non-invasive, and Affordable Detection of Tuberculosis	RM 20,000	Active 2017-2019
29	Geran Putra-IPS (Project Leader)	Preparation and Characterization of [68Ga]NODAGA-Pamidronic acid for PET Bone Cancer Imaging agent	RM 25000	Active 2018-2020
30	Geran Putra – Inovasi (Project Leader)	ImprintSorb for Rapid Mercury Adsorbent for Liquid Hydrocarbon Streams	RM 435,700	Active 2017-2019
31	Geran Putra – IPB (Project Leader)	Intravesical Targeted Drug Delivery for Non-Muscle Invasive Bladder Cancer	RM 456,000	Active 2018-2021
32	Geran MRUN (Project Leader)	Immuno Based Biosensors System for Ultrasensitive, non invasive and Affordable Detection of Mycobacterium Tuberculosis (TB) for Future Home Test Kit	RM 467,500	Active 2018-2020
33	Geran FRGS (Project Leader)	Nano Molecular imprinted polymer (NanoMIP)for biomimetic application of penicilin based antibiotic:synthesis and characterization	RM 106,621	Active 2019-2021

(Title of Invention, Role, Type of Intellectual Property Rights, Registration No., Year)

**Patent Filing/Pending (Project leader/main inventor)**

1. PI 20082144 “Heavy Metal Detection Kit”.

2. PI 20094858 "Membrane molecularly imprinted polymer for dye extraction".
3. PI 20092843 "Amino acid /nanoparticle modified electrode for electrochemical analysis of As(III)".
4. PI 2010700055 "Electrochemical DNA based biosensor for Trichoderma Hazianum".
5. PI 2010003432 "Formaldehyde Biosensor"
6. PI 2012002703 "A modified electrode for detection of biological material".
7. PI2013701347 "A method for preparing a sorbent for removing heavy metals from waste water"
8. PI2015701091 "Molecular Imprinted Polymer for Removal of Mercury and Method of Preparation of The Same"
9. **PI2017700345 Silicon Nanowire Modified Electrode For Mercury Detection (New: Method of Preparing A Nanowire Composite Electrode)**
10. **PI2017700106 "Targeted Drug Delivery Device"**
11. **PI2018703652 "Ion Imprinted polymer monolith for heavy metal removal and method preparation thereof"**
12. **PI2018701885 "Lateral flow immunoassay (LFIA) strip for detecting mycobacterium tuberculosis (MTB) antigen in biological sample and method thereof"**

**Granted**

13. **MY160794A "Membrane Molecularly Imprinted Polymer for Dye Extraction"**

(Title of Award/Honour, Role, Award/Honour Authority, Level, Year)

1. JPA scholarship for undergraduate study at Universiti Kebangsaan Malaysia, Malaysia.
2. National Science Foundation (by Malaysian Government) scholarship for PhD study (1999- 2002).
3. Postdoctoral Fellowship under Brain Gain Malaysia Programme (MOSTI) -2008.
4. Bronze Medal, ITEX, 2006. Main Researcher
5. Silver Medal, MTE, 2007. Main Researcher
6. Bronze Medal, MTE, 2008. Main Researcher
7. Bronze Medal, ITEX, 2009. Main Researcher
8. Malaysia Innovative Product Award, ITEX, 2009. Main Researcher.
9. Gold Medal, Water Inno Awards, 2009. Main Researcher.
10. Silver Medal, MTE, 2011. Main Researcher
11. Gold Medal, ITEX, 2011. Main Researcher
12. Gold Medal, MIEXPO, 2013. Main Researcher

13. Bronze Medal, Invention & Research Exhibition 2005, RMC, UPM. Main Researcher.
14. Bronze Medal, Invention & Research Exhibition 2006, RMC, UPM. Main Researcher
15. Silver Medal, Invention & Research Exhibition 2006, RMC, UPM. Main Researcher
16. Gold Medal, Invention & Research Exhibition 2007, RMC, UPM. Main Researcher
17. Bronze Medal, Invention & Research Exhibition 2007, RMC, UPM. Main Researcher
18. Bronze Medal, Invention & Research Exhibition 2007, RMC, UPM. Main Researcher.
19. Bronze Medal, Invention & Research Exhibition 2009, RMC, UPM. Main Researcher
20. Bronze Medal, Invention & Research Exhibition 2009, RMC, UPM. Main Researcher
21. Silver Medal, Invention & Research Exhibition 2010, RMC, UPM. Main Researcher
22. Silver Medal, Invention & Research Exhibition 2010, RMC, UPM. Main Researcher
23. Gold Medal, Invention & Research Exhibition.2010. RMC, UPM. Co-researcher
24. Gold Medal, Invention & Research Exhibition. 2010. RMC, UPM. Co-researcher
25. Bronze Medal, Invention & Research Exhibition. 2010. RMC, UPM. Co-researcher
26. Bronze Medal, Invention & Research Exhibition 2009, RMC, UPM. Co Researcher
27. Gold Medal, Invention & Research Exhibition 2003, RMC, UPM. Co-researcher
28. Silver Medal, Expo S&T 2003, Kuala Lumpur. Co-researcher
29. Excellence Service Award, Faculty of Science (2003)
30. Excellence Service Award, Faculty of Science (2004)
31. Excellence Service Award, Faculty of Science (2005)
32. Excellence Service Award, Faculty of Science (2003)
33. Excellence Service Award, Faculty of Science (2004)
34. Anugerah Saintis Cemerlang, Fakulti Sains (2004)
35. Anugerah Pengajar Cemerlang, Fakulti Sains (2004)
36. Anugerah Saintis Cemerlang, Fakulti Sains (2005)
37. Anugerah Pengajar Cemerlang, Fakulti Sains (2005)
38. Anugerah Adi Saintis Muda, Fakulti Sains (2007)

39. Anugerah Perkhidmatan Cemerlang, UPM (2007)
40. Anugerah Perkhidmatan Cemerlang, UPM (2013)
41. Anugerah Pengajar Muda, Fakulti Sains (2008)
42. Top Research Scientist Malaysia (TRSM) – 2013
43. Anugerah Fellowship Naib Canselor Kategori Penyelidik Cemerlang - 2017

**Graduated:**

Phd students as main supervisor: 18

Master students as main supervisor: 24

Phd students as co-supervisor: 21

Master students as main supervisor: 20

**On-going:**

Phd students as main supervisor: 9

Master students as main supervisor: 3

Phd students as co-supervisor: 7

Master students as main supervisor: 8

**Publication 2020:**

1. N Mohd Bakhor, NA Yusof, J Abdullah, H Wasoh, SK Ab Rahman, SF Abd Rahman. Surface Enhanced CdSe/ZnS QD/SiNP Electrochemical Immunosensor for the Detection of Mycobacterium Tuberculosis by Combination of CFP10-ESAT6 for Better Diagnostic Specificity. *Materials*.13 (2020) 149. Q2.
2. MHM Zaid, J Abdullah, NA Yusof, H Wasoh, Y Sulaiman, MFM Noh, R Issa. Reduced Graphene Oxide/TEMPO-Nanocellulose Nanohybrid-Based Electrochemical Biosensor for the Determination of Mycobacterium tuberculosis. *Journal of Sensors* 2020. Q2
3. N Ariffin, NA Yusof, J Abdullah, SF Abd Rahman, NH Ahmad Raston, N Kusnin, S Suraiya. Lateral Flow Immunoassay for Naked Eye Detection of Mycobacterium tuberculosis. *Journal of Sensors* 2020. Q2
4. MR Razak, NA Yusof, AZ Aris, HM Nasir, MJ Haron, NA Ibrahim, IS Johari, S Kamaruzaman. Phosphoric acid modified kenaf fiber (K-PA) as green adsorbent for the removal of copper (II) ions towards industrial waste water effluents. *Reactive and Functional Polymers*. 147 (2020) Q1. Page 104466
5. EM Almbrok, NA Yusof, J Abdullah, RM Zawawi. Electrochemical Behavior and Detection of Diclofenac at a Microporous Si<sub>3</sub>N<sub>4</sub> Membrane Modified Water–1, 6-dichlorohexane Interface System. *Chemosensors*. 8 (1) 2020 p11.Q2.
6. HB Abdullah, I Ramli, I Ismail, NA Yusof. Utilization of waste engine oil for carbon nanotube aerogel

production using floating catalyst chemical vapor deposition. *Journal of Cleaner Production*. 261 (2020) page 121188. Q1

7. Suhainie Ismail, Nor Azah Yusof, Jaafar Abdullah, Siti Fatimah Abd Rahman. Development of Electrochemical Sensor Based on Silica/Gold Nanoparticles Modified Electrode for Detection of Arsenite. *IEEE Sensors Journal*. Volume 20(7) 2020. Page 3406 – 3414. Q1.

8. FA Azri, S Eissa, M Zourob, R Chinnappan, R Sukor, NA Yusof, NHA Raston, A Alhoshani, S Jinap. Electrochemical determination of zearalenone using a label-free competitive aptasensor. *Mikrochimica Acta*. 187(5) 2020 page 266.

9. Zarif Ashhar, Nor Azah Yusof, Fathinul Fikri Ahmad Saad, Siti Mariam Mohd Nor, Faruq Mohammad, Wan Hamirul Bahrin Wan Kamal, Hishar Hassan Muhammad, Hazlina Ahmad Hassali, Hamad Al-Lohedan. Preparation, characterization, and radiolabeling of [<sup>68</sup>Ga] Nodaga-pamidronic acid: A potential PET bone imaging agent. *Molecules*. (2020). Q2.

10. Nurhamizah Rahmat, Nor Azah Yusof, Azizul Isha, Wong Mui-Yun, Roozbeh Hushiarian and Fowotade Sulayman Akanbi, Detection of stress induced by *Ganoderma boninense* infection in Oil Palm Leaves using Reduced Graphene Oxide and Zinc Oxide Nanoparticles Screen-Printed Carbon Electrode. *IEEE Sensors Journal* (2020). 1- 8. Q1

11. Azizul Isha, Nor Azah Yusof, Khozirah Shaari, Rosiah Osman, Siti Nor Akmar Abdullah, Mui-Yun Wong. Metabolites identification of oil palm roots infected with *Ganoderma boninense* using GC–MS-based metabolomics. *Arabian Journal of Chemistry* (2020). 6191-6200. Q1.

12. Nur Ain Asyiqin Anas, Yap Wing Fen, Nor Azah Yusof, Nur Alia Sheh Omar, Nur Syahira Md Ramdzan, Wan Mohd Ebtisyam Mustaqim Mohd Daniyal, Investigating the Properties of Cetyltrimethylammonium Bromide/Hydroxylated Graphene Quantum Dots Thin Film for Potential Optical Detection of Heavy Metal Ions. *Materials* (2020). 1-16. Q2

13. Nur Ain Asyiqin Anas, Yap Wing Fen, Nor Azah Yusof, Nur Alia Sheh Omar, Wan Mohd Ebtisyam Mustaqim Mohd Daniyal, Nur Syahira Md Ramdzan. Highly sensitive surface plasmon resonance optical detection of ferric ion using CTAB/hydroxylated graphene quantum dots thin film. *Journal of Applied Physics* 128 (8). (2020).

14. Azizul Isha, Nor Azah Yusof, Rosiah Osman, Mui-Yun Wong, Siti Nor Akmar Abdullah. NMR-based metabolomics reveals effect of *Ganoderma boninense* infection on oil palm leaf at 30 days post-infection. *Plant Omics Journal*. 13(01). (2020). 15-20.

15. Farhatun Najat Maluin, Mohd Zobir Hussein, Nor Azah Yusof, Abu Seman Idris, Leona Daniela Jeffery Daim, Murni Nazira Sarian, Nor Fadilah Rajab, Siew Ee Ling, Noramiwati Rashid, Sharida Fakurazi. Cytoprotection, Genoprotection, and Dermal Exposure Assessment of Chitosan-Based Agronanofungicides. *Pharmaceutics* (2020). 12(6). 1-15. Q2.

16. Norzila Kusnin, Nor Azah Yusof, Jaafar Abdullah, Suriana Sabri, Faruq Mohammad, Shuhaimi Mustafa, Nurul Asyikeen Ab Mutalib, Shinobu Sato, Shigeori Takenaka, Nor Azizah Parmin, Hamad A. Al-Lohedan. Electrochemical sensory detection of *Sus scrofa* mtDNA for food adulteration using hybrid ferrocenylnaphthalene diimide intercalator as a hybridization indicator. *Royal Society of Chemistry* (2020). 10. 27336-27345. Q1

17. Mohd Hazani Mat Zaid, Che Engku Noramalina Che Engku Chik, Nor Azah Yusof, Jaafar Abdullah, Siti Sarah Othman, Rahizan Issa, Mohd Fairulnizal Md Noh, Helmi Wasoh. DNA Electrochemical Biosensor Based on Iron Oxide/Nanocellulose Crystalline Composite Modified Screen-Printed Carbon Electrode for Detection of *Mycobacterium tuberculosis*. *Molecules* (2020). 25(15). Q2.

18. Farhatun Najat Maluin, Mohd Zobir Hussein, Nor Azah Yusof, Sharida Fakurazi, Abu Seman Idris, Nur Hailini Zainol Hilmi, Leona Daniela Jeffery Daim. Chitosan-Based Agronanofungicides as a Sustainable Alternative in the Basal Stem Rot Disease Management. *Journal of Agricultural and Food Chemistry* (2020). 68(15). 4305-4314. Q1.

19. Hayder Abdullah, Ramli Irmawati, Ismayadi Ismail, Nor Azah Yusof. Direct synthesis of carbon nanotube aerogel using floating catalyst chemical vapor deposition: effect of gas flow rate. (2020). 74.

3359–3365. Q3.

20. Norhafniza Awaludin, Jaafar Abdullah, Faridah Salam, Kogeethavani Ramachandran, Nor Azah Yusof, Helmi Wasoh. Fluorescence-based immunoassay for the detection of *Xanthomonas oryzae* pv. *oryzae* in rice leaf. *Analytical Biochemistry* (2020). Q2.

21. Farhatun Najat Maluin, Mohd Zobir Hussein, Nor Azah Yusof, Sharida Fakurazi, Abu Seman Idris, Nur Hailini Zainol Hilmi, Leona Daniela Jeffery Daim. Phytotoxicity of chitosan-based agronomofungicides in the vegetative growth of oil palm seedling. *PLOS One* (2020). 15(4). Q1.

#### Publication 2019:

1. Fariza Aina Abd Manan, Wai Weng Hong, Jaafar Abdullah, Nor Azah Yusof, Ishak Ahmad. Nanocrystalline cellulose decorated quantum dots based tyrosinase biosensor for phenol determination. 2019. *Materials Science and Engineering: C*. 99. 37-46.

2. Nor Azah Yusof, Sazlinda Kamaruzaman, Faruq Mohammad, Helmi Wasoh, Hamad A Al-Lohedan. High-Efficiency DNA Extraction Using Poly(4,4'-Cyclohexylidene Bisphenol Oxalate)-Modified Microcrystalline Cellulose-Magnetite Composite. 2019. *International Journal of Polymer Science*. <https://doi.org/10.1155/2019/5738613>.

3. Nor Azah Yusof, Sazlinda Kamaruzaman, Faruq Mohammad, Helmi Wasoh, Hamad A Al-Lohedan, DNA Adsorption Studies of Poly(4,4'-Cyclohexylidene Bisphenol Oxalate)/Silica Nanocomposites. 2019. *Materials*. 12(7), 1178; <https://doi.org/10.3390/ma12071178>

4. Nor Azah Yusof, Sazlinda Kamaruzaman, Faruq Mohammad, Helmi Wasoh, Al Abbosh, Khulood Fahad, Hamad A Al-Lohedan, Synthesis, Characterization, and Application of Poly(4,4'-Cyclohexylidene Bisphenol Oxalate) for Solid-Phase Extraction of DNA. 2019. *BioMed Research International*. <https://doi.org/10.1155/2019/7064073>.

5. Azizul Isha, Fowotade Sulayman Akanbi, Nor Azah Yusof, Rosiah Osman, Wong Mui-Yun, Siti Nor Akmar Abdullah, An NMR Metabolomics Approach and Detection of *Ganoderma boninense*-Infected Oil Palm Leaves Using MWCNT-Based Electrochemical Sensor. 2019. *Journal of Nanomaterials*. <https://doi.org/10.1155/2019/4729706>.

6. Sulayman Akanbi Fowotade, Nor Azah Yusof, Jaafar Abdullah, Yusran Sulaiman, Siti Fatimah Abd Rahman, Enhanced electrochemical sensing of secondary metabolites in oil palms for early detection of *Ganoderma boninense* based on novel nanoparticle-chitosan functionalized multi-walled carbon nanotube platform. 2019. *Sensing and Bio-Sensing Research*. 23. 100274.

7. Hayder Baqer Abdullah, Irmawati Ramli, Ismayadi Ismail, Nor Azah Yusof. Synthesis and mechanism perspectives of a carbon nanotube aerogel *via* a floating catalyst chemical vapour deposition method. 2019. *Bulletin of Materials Science*. 42(5). 241.

8. Ruzanna Ibrahim, Mohd Zobir Hussein, Nor Azah Yusof, Fatimah Abu Bakar. Carbon Nanotube-Quicklime Nanocomposites Prepared Using a Nickel Catalyst Supported on Calcium Oxide Derived from Carbonate Stones. 2019. *Nanomaterials*. 9(9). 1239.

9. Farhatun Najat Maluin, Mohd Zobir Hussein, Nor Azah Yusof, Sharida Fakurazi, Idris Abu Seman, Nur Hailini Zainol Hilmi, Leona Daniela Jeffery Daim. Enhanced fungicidal efficacy on *Ganoderma boninense* by simultaneous co-delivery of hexaconazole and dazomet from their chitosan nanoparticles. 2019. *RSC Advances*. 9(46). 27083-27095.

10. Pei Ying Lau, Khan Loon Ng, Nor Azah Yusof, Guozhen Liu, Yatimah Alias, Sook Mei Khor. A sample pre-treatment-free electrochemical immunosensor with negative electro-pulsion for the quantitative detection of acrylamide in coffee, cocoa and prune juice. 2019. *Analytical Methods*. 11(33). 4299-4313.

11. Farhatun Najat Maluin, Mohd Zobir Hussein, Nor Azah Yusof, Sharida Fakurazi, Abu Seman Idris, Zainol Hilmi, Nur Hailini, Leona Daniela Jeffery Daim. Preparation of Chitosan-Hexaconazole



Nanoparticles as Fungicide Nanodelivery System for Combating *Ganoderma* Disease in Oil Palm. 2019. *Molecules*. 14(13). 2498.

12. Farah Asilah Azri, Jinap Selamat, Rashidah Sukor, Nor Azah Yusof, Ahmad Raston, Nurul Hanun, Noordiana Nordin, Nuzul Noorahya Jambari. *Etilingera elatior*-Mediated Synthesis of Gold Nanoparticles and Their Application as Electrochemical Current Enhancer. 2019. *Molecules*. 24(17). 3141.

13. Salisu Nasir, Mohd Zobir Hussein, Zulkarnain Zainal, Nor Azah Yusof, Syazwan Afif Mohd Zobir, Ibrahim Mustapha Alibe. Potential Valorization of By-product Materials from Oil Palm: A review of Alternative and Sustainable Carbon Sources for Carbon-based Nanomaterials Synthesis. 2019. *BioResources*. 14(1). 2352-2388.

14. Suhainie Ismail, Nor Azah Yusof, Jaafar Abdullah. Development of electrochemical sensor based on silica/gold nanoparticles modified electrode for detection of arsenite. *IEEE Sensors*. Accepted for publication.

15. Suleiman Salihu, Nor Azah Yusof, Faruq Mohammad, Jaafar Abdullah and Hamad A. Al-Lohedan. Nickel nanoparticles-modified electrode for the electrochemical sensory detection of Penicillin G in bovine milk samples. *Journal of Nanomaterials*. Accepted for publication.

#### **Publication 2018:**

1. JIA Rashid, NA Yusof. Laboratory Diagnosis and Potential Application of Nucleic Acid Biosensor Approach for Early Detection of Dengue Virus Infections. *Biosciences Biotechnology Research Asia*. 2018 15 (2), 245-255. Q4 (Corresponding author)

2. N Nordin, NA Yusof, S Radu, R Hushiarian. Development of an Electrochemical DNA Biosensor to Detect a Foodborne Pathogen. *Journal of visualized experiments: JoVE*. Q2 (Corresponding author)

3. Noremylia Mohd Bakhori, Nor Azah Yusof, Jaafar Abdullah, Helmi Wasoh, Siti Suraiya Md Noor, Nurul Hanun Ahmad Raston, Faruq Mohammad. Immuno Nanosensor for the Ultrasensitive Naked Eye Detection of Tuberculosis. 2018. *Sensors (Basel, Switzerland)* 18 (6). Q1 (Corresponding author)

4. Muhammad Raznisyafiq Razak, Nor Azah Yusof, Mohammad Jelas Haron, Norazowa Ibrahim, Faruq Mohammad, Sazlinda Kamaruzaman, Hamad A Al-Lohedan. Iminodiacetic acid modified kenaf fiber for waste water treatment. 2018. *International journal of biological macromolecules* 112, 754-760. Q2 (Corresponding author)

5. Siti Khadijah Ab Rahman, Nor Azah Yusof, Abdul Halim Abdullah, Faruq Mohammad, Azni Idris, Hamad A Al-Lohedan. Evaluation of porogen factors for the preparation of ion imprinted polymer monoliths used in mercury removal. 2018. *PloS one* 13 (4), e0195546. Q1 (Corresponding author)

6. Aliyu Muhammad, Reza Hajian, Nor Azah Yusof, Nafiseh Shams, Jaafar Abdullah, Pei Meng Woi, Hamid Garmestani. A screen printed carbon electrode modified with carbon nanotubes and gold nanoparticles as a sensitive electrochemical sensor for determination of thiamphenicol residue in milk. 2018. *RSC Advances* 8 (5), 2714-2722 Q1 (Corresponding author)

7. Shabut, A.M., Hoque Tania, M., Lwin, K.T., Evans B. A., Yusof, N. A., Abu-Hassan, K.J., Hossain, M.A. An intelligent mobile-enabled expert system for tuberculosis disease diagnosis in real time. *Expert Systems with Applications*. 2018. Volume 114, Pages 65-77

8. Rahim, Z.A., Yusof, N.A., Haniff, M.A.S.M., Mohammad, F. Syono, M.I., Daud, N. Electrochemical measurements of multiwalled carbon nanotubes under different plasma treatments. *Materials*. Q2. 2018. Volume 11.

9. Azmi, N.E., Rashid, A.H.A., Abdullah, J., Yusof, N.A., Sidek, H. Fluorescence biosensor based on encapsulated quantum dots/enzymes/sol-gel for non-invasive detection of uric acid. *Journal of Luminescence*. Q2. 2018. Volume 202. Pages 309-315.

10. Azri, F.A., Sukor, R., Selamat, J., Bakar, F.A., Yusof, N.A., Hajian, R. Electrochemical immunosensor for detection of aflatoxin B1 based on indirect competitive ELISA. *Toxins*. Q2. 2018. Volume 10. Issue 5.
11. Zainudin, A.A., Fen, Y.W., Yusof, N.A., Omar, N.A.S. Incorporation of surface plasmon resonance with novel valinomycin doped chitosan-graphene oxide thin film for sensing potassium ion. *Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy*. Q2. 2018. Volume 191. 15 Pages 111-115
12. Nasir, S., Hussein, M.Z., Zainal, Z., Yusof, N.A. Carbon-based nanomaterials/allotropes: A glimpse of their synthesis, properties and some applications. *Materials*. Q2. 2018. Volume 11. Issue 2.
13. Muhammad, A., Hajian, R., Yusof, N.A., Shams, N., Abdullah, J. Woi, P.M., Garmestani, H. A screen printed carbon electrode modified with carbon nanotubes and gold nanoparticles as a sensitive electrochemical sensor for determination of thiamphenicol residue in milk. *RSC Advances*. Q1. 2018. Volume 8. Pages 2714-2722
14. Talib, N.A.A., Salam, F., Yusof, N.A., Alang Ahmad, S.A., Azid, M.Z., Mirad, R., Sulaiman, Y. Enhancing a clenbuterol immunosensor based on poly(3,4-ethylenedioxythiophene)/multi-walled carbon nanotube performance using response surface methodology. *RSC Advances*. Q1. 2018. Volume 8, Pages 15522-15532
15. Mohd Azmi, Umi Zulaikha, Nor Azah Yusof, Norzila Kusnin, Jaafar Abdullah, Siti Suraiya, Poh Shing Ong, Ahmad Raston, Nurul Hanun, Abd Rahman, Siti Fatimah, Mohamad Fathil, Mohamad Faris. Sandwich electrochemical immunosensor for early detection of tuberculosis based on graphene/polyaniline-modified screen-printed gold electrode. *Sensors*. Q1. Volume 18. Page 3926
16. S Nasir, MZ Hussein, Z Zainal, NA Yusof, M Zobir, S Afif. Electrochemical energy storage potentials of waste biomass: oil palm leaf-and palm kernel shell-derived activated carbons. *Energies*. Q3. Volume 11, page 3410

#### **Publication 2017:**

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#### Abstract/Proceeding

#### International Conference

1. Pre-clinical validation study of a miniaturized electrochemical immunoassay based on differential pulse voltammetry for early detection of mycobacterium tuberculosis, Umi Zulaikha Mohd Azmi 1, Nor Azah Yusof 1,2,\*, Norzila Kusnin 1, Siti Suraiya Md Noor 3, Ong Poh Shing 4 and Nurul Hanun Ahmad Raston 5. 6th International Conference on Bio-Sensing Technology (Elsevier Conference) 16 - 19 June 2019 - Kuala Lumpur, Malaysia
2. Conciliating electrochemical characterization of a newly developed sensitive electrode anchored on Gold nanoparticle-chitosan functionalized multi-walled carbon nanotube platform for the detection of secondary metabolites in oil palms (*Elaeis guineensis* Jacq.) roots. Sulayman Akanbi, Fowotade 1,2, Nor Azah Yusof1,3\*, Jaafar Abdullah1 and Yusran Sulaiman. 6<sup>th</sup> International Symposium on Applied Engineering and Sciences (SAES2018). Kyushu Institute of Technology, 15<sup>th</sup> – 16<sup>th</sup> Dec 2018.
3. Detection of Quinoline in *G. boninense*-Infected Plants Using Functionalized Multi-Walled Carbon Nanotubes: A Field Study, Fowotade Sulayman Akanbi 1,2, Nor Azah Yusof 1,3,\*, Jaafar Abdullah 1, Yusran Sulaiman 1 and Roozbeh Hushiarian 4, *Sensors in Food and Agriculture*, 18-19/7/2018, London, UK.
4. Immuno Nanosensor for the Ultrasensitive and Affordable Naked Eye Detection of Tuberculosis, Noremylia Mohd Bakhori1, Nor Azah Yusof1,2, Jaafar Abdullah2, Helmi Wasoh3, Siti Suraiya Md Noor4, Nurul Hanun Ahmad Raston5, *Sensors in Food and Agriculture*, 18-19/7/2018, London, UK.
5. Noremylia Mohd Bakhori<sup>1</sup>, Syazana Ameera Syed Amri<sup>1</sup>, Nazihah Ariffin, Nor Azah Yusof<sup>1,2</sup>, Jaafar Abdullah<sup>1,2</sup> and Helmi Wasoh, Affordable, sensitive and Non-Invasive Detection System For *Mycobacterium Tuberculosis*, International Symposium on Applied Engineering and Sciences, 17-18/12/2016, Kitakyushu, Japan
6. Zulaiha Abdul Rahim, Nor Azah Yusof, Fabrication of bottom up mutiwalled carbon nanotube electrode sensor application, *Sensors in Medicine*, 9-10/11/2016, London, UK
7. Nor Azah Yusof, Siti Fatimah Abdul Rahman, Uda Hashim, Mohd. Nizar Hamidon. Development of sensor for dengue detection based on top down approach silicon nanowire. 24<sup>th</sup> World Congress on Biosensors. 27-30 May 2015. Melbourne Australia.
8. Nor Azah Yusof, Jahwarhar Izuan Abdul Rashid, Uda Hashim. Development of sensor for dengue detection based on silicon nanowire modified electrode. *Sensors in*

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9. Nor Azah Yusof, Nurulhaidah Daud, Siti Mariam Mohd. Nor. Electrocatalytic Characteristic of Peptide Modified Platinum Electrode in Development of Biosensor for Determination of As(III). Hybrid Material 2013. March 2013. Sorrento Italy.
10. Nor Azah Yusof, Jahwarhar Izuan Abdul Rashid, Uda Hashim. Development of sensor for dengue detection based on silicon nanowire modified electrode. Symposium in Nanomedicine 2013. November 2013. Kitakyushu, Japan
11. Nor Azah Yusof, Sabo Wada Dutse, Zulkarnain Zainal, Mohd. Zobir Hussien. Development of detection for ganoderma boninense, pathogen of oil palm tree. 3<sup>rd</sup> International Conference on Biosensing Technology. May 2013. Sitges Spain.
12. Nor Azah Yusof, Siti Zareena Mohd. Saat, Tan Wee Tee, Abdul Halim Abdullah. Electrocatalytic Characteristic of Carbon Nanotube/Aspartic Acid Nanohybrid Modified Platinum Electrode in Development of Biosensor for Determination of Pb(II). Nano Today 2009. 2-5/8/2009. Singapore.
13. Nor Azah Yusof. Investigation of the Interaction Between ssDNA/ds DNA and Hoechst 33258; Towards Development of an Electrochemical DNA Biosensor. EUROPTRODE IX. 30/3-2/4 2008. Dublin.
14. Azizul Isha, Nor Azah Yusof, Mazura Abdul Malik and Hazlina Hamdan. 2005. Simultaneous Determination of Pb(II) and Cd(II) Using Artificial Neural Network Based on 4-(2-pyridylazo resorcinol). In E-proceeding of International Conference on Sensors & International Conference on New Techniques in Pharmaceutical and Biomedical Research. Kuala Lumpur, Malaysia.
15. Azizul Isha, Nor Azah Yusof, Mazura Abdul Malik and Hazlina Hamdan Application of Artificial Neural Network to Simultaneous Spectrophotometric Determination of Lead(II) and Mercury(II) based on 2-(5-Bromo-2-Pyridylazo)-5-Diethylaminophenol. ASIASENSE. 14-18/7/2003. Kuala Lumpur.
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#### National

1. Nor Azah Yusof, Mohd Rashidi Abdul Manap, Siti Mariam Mohd. Nor and Faujan b.H. Ahmad. Synthesis and Characterization of Peptidyl Fluorescent for Metal Ion detection. FSC 2011. 5-6/7/2011. UPM
2. Nurulhaidah Daud, Nor Azah Yusof and Tan Wee Tee. Development of electrochemical sensor for detection of mercury by exploiting peptide modified electrode. FSC 2011. 5-6/7/2011. UPM
3. Roozbeh Hushiaran, Nor Azah Yusof, Abdul Halim Abdullah and Shahrul Ainliah Alang Ahmad. Design and construction of a DNA bioreceptor using quantum dot and chemically synthesized water soluble iron oxide magnetic nanoparticles. FSC 2011. 5-6/7/2011. UPM.
4. Sabo Wada Dutse, Nor Azah Yusof and Haslina Ahmad. Electrochemical characterization of interaction between ruthenium complex and DNA molecule. FSC 2011. 5-6/7/2011. UPM.
5. Nor Azah Yusof and Eng Jun Shearn. Development of melamine imprinted polymer appended with ZnS quantum Dot for melamine detection. FSC 2011. 5-6/7/2011. UPM.
6. Mohammad Zakaria Othman, Nor Azah Yusof, Abdul halim Abdullah and Shahrul Ainliah Alang Ahmad. Detection of COD by photocatalytic degradation of organic compound using TiO<sub>2</sub>-film via fluorescence method. FSC 2011. 5-6/7/2011. UPM.
7. Noremylia Mohd. Bakhori, Nor Azah Yusof, Abdul halim Abdullah and Mohd. Zobir Hussien. Development of DNA based nanosensor for early detection of Ganoderma boninense. FSC 2011. 5-

6/7/2011. UPM

8. Siti Khadijah Ab. Rahman, Nor Azah Yusof, Nor Azowa Ibrahim and Mohd. Zobir Hussein. Development of rapid system for melamine based on optical transducer system. FSC 2011. 5-6/7/2011. UPM.

9. Shafiquzzaman Siddiquee., Nor Azah Yusof., Abu Bakar Salleh., Fatimah Abu Bakar, Electrochemical DNA biosensor for the detection of specific gene related to *Trichoderma harzianum* species. SKAM 23. 4-6/10/2010. Terengganu.

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11. Hairul Hisham Hamzah, Nor Azah Yusof., Abu Bakar Salleh. Fatimah Abu Bakar. Optical test strip for detection of benzoic acid based on inhibitive effect on Tyrosinase Enzyme. 16th MCC . 12-14/10/2010. Kuala Lumpur

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17. Siti Zareena Mohd. Saat, Nor Azah Yusof, Tan Wee Tee and Abdul Halim Abdullah. Development of novel nanotransducer for heavy metal ions biosensor by exploiting amino acids as recognition element. 10th Asian Conference on Analytical Sciences. 11-13/8/2009. Kuala Lumpur.

18. Safura Taufik, Nor Azah Yusof and Tan Wee Tee. Electrochemical study of interaction between redox intercalators and ssDNA/dsDNA. 10th Asian Conference on Analytical Sciences. 11-13/8/2009. Kuala Lumpur.

19. Nadiah Abdul Rahman, Nor Azah Yusof and Siti Mariam Mohd. Nor. Development of novel nanotransducer for toxic metal ions biosensor by exploiting cyclic peptides as recognition element. 10th Asian Conference on Analytical Sciences. 11-13/8/2009. Kuala Lumpur.

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22. Nor Dyana Zakaria, Nor Azah Yusof, Md. Jelas Haron and Abdul Halim Abdullah. Fabrication of a molecular imprinted polymer membrane for 2,4-dinitrophenol. 10th Asian Conference on Analytical Sciences. 11-13/8/2009. Kuala Lumpur.

23. Anuar Kassim, Saeid Ahmadzadeh, Tan Wee Tee, Nor Azah Yusof , Lee Yook Heng and

Majid Rezayi. Cesium(I) selective potentiometric membrane electrode based on p-isopropylcalix[6]arene in PVC matrix. 10th Asian Conference on Analytical Sciences. 11-13/8/2009. Kuala Lumpur.

24. Anuar Kassim, Majid Rezayi, Tan Wee Tee, Nor Azah Yusof, Lee Yook Heng and Saeid Ahmadzadeh. Anion recognition: fabrication of a highly selective and sensitive CrO<sub>4</sub><sup>2-</sup>-PVC sensor based on N,N'-bis(salicylidene)ethyleneaminocobalt(II) hydrate. 10th Asian Conference on Analytical Sciences. 11-13/8/2009. Kuala Lumpur.

25. Siti Zareena Mohd. Saat, Nor Azah Yusof, Tan Wee Tee and Abdul halim Abdullah. Development of practical heavy metal ions biosensor by exploiting amino acids as recognition elements. Fundamental Science Congress 2009. UPM.

26. Saliza Asman, Nor Azah Yusof, Md. Jelas Haron and Abdul Halim Abdullah. Synthesis and evaluation of membrane molecular imprinted polymer for methylene blue dye uptake. Fundamental Science Congress 2009. UPM.

27. Safura Taufik, Nor Azah Yusof and Tan Wee Tee. Electrochemical study of interaction between redox intercalators and ssDNA/dsDNA. Fundamental Science Congress 2009. UPM.

28. Nurulhaidah Daud, Nor Azah Yusof, Tan Wee Tee and Abdul halim Abdullah. Electrocatalytic characteristic of carbon nanotube/glutamine nanohybrid modified electrode in development of biosensor for determination of As(III). Fundamental Science Congress 2009. UPM.

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32. Mohd. Rashidi Abdull Manap, Nor Azah Yusof, Siti Mariam Mohd. Noor and Faujan Ahmad. Synthesis and Characterization of peptidyl fluorescent probe dansyl-glycine-serine-glycine-methyl ester; application for metal ion detection. Fundamental Science Congress 2009. UPM.

33. Hossein Jahangirian, Wan Md. Zin Wan Yunus, Md. Jelas Haron, Nor Azah Yusof. Separation of fatty hydroxamic acids from canola oil by precipitation of copper fatty hydroxamate and nitric acid stripping. Fundamental Science Congress 2009. UPM.

34. Nora Salina Md. Salim, Kaida Khalid, Nor Azah Yusof. Microwave based biosensor for glucose detection. Fundamental Science Congress 2009. UPM.

35. Hasnidar Hamid, Kaida Khalid, Nor Azah Yusof. Dielectric properties of lipid at microwave frequencies. Fundamental Science Congress 2009. UPM.

36. Yadollah Abbdollahi, Abdul Halim Abdullah, Zulkarnain Zainal, Nor Azah Yusof. Photodegradation aquatic m-cresol by ZnO under UV and visible light irradiation. Fundamental Science Congress 2009. UPM.

37. Azizul Isha, Nor Azah Yusof, Mazura Abdul Malik and Hazlina Hamdan. 2005. Simultaneous Determination of Pb(II) and Cd(II) Using Artificial Neural Network Based on 4-(2-pyridylazo resorcinol). In E-proceeding of International Conference on Sensors & International Conference on New Techniques in Pharmaceutical and Biomedical Research. Kuala Lumpur, Malaysia.

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39. Azizul Isha, Nor Azah Yusof, Musa Ahmad, Dedy Suhendra and Wan Md Zin Wan Yunus. 2004. Spectrophotometric Determination of Trace Iron(III) and Vanadium(V) Ions Based on Fatty Hydroxamic Acid. In E-proceeding of Regional Conference For Young Chemist. USM, Penang.

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- dan Pb(II) Menggunakan Membran Kitosan, Prosiding Seminar IRPA RMK 7, Jilid II, m.s. 200-204.
41. Nor Azah Yusof dan Musa Ahmad, 2002, A Development of a Flow Optosensor for Determination of Pb(II) and Co(II) ions based on immobilized PAR and Gallocynine by Using Flow Injection Analysis, Prosiding Kolokium Pertama Fakulti Sains dan Teknologi.
  42. Musa Ahmad and Nor Azah Yusof, 2002, The Use of Immobilised Gallocynine in Chitosan Membrane for Lead(II) detection based on Flow Injection Opto-sensor, Abstract Book for EUROPT(R)ODE VI: The 6th European Conference on Optical Chemical Sensors and Biosensors, Manchester, England, page 187.
  43. Musa Ahmad dan Nor Azah Yusof, 2000, Pembinaan Penderia Kimia Gentian Optik Untuk Pengesanan Beberapa Logam Berat Berasaskan Analisis Suntikan Aliran II, Prosiding Seminar IRPA RMK-7, Jilid II, 494-497.
  44. Musa Ahmad, Jariah Abdullah, Norezuny Mohamad, Che Faridah Osman, Elya Sulfiza Marsom dan Nor Azah Yusof, 2000, Gentian Optik Sebagai Media Untuk Penderiaan Spesies Kimia di persekitaran, Prosiding Seminar Kimia Bersama ITB-UKM IV, 417-422.
  45. Musa Ahmad dan Nor Azah Yusof, 1999, Pembinaan Penderia Kimia Gentian Optik Untuk Pengesanan Beberapa Logam Berat Berasaskan Analisis Suntikan Aliran I, Prosiding Seminar IRPA-UKM RMK7, Jilid 3, 607-615.
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  47. Nor Azah Yusof and Khairunnisa Rashid. Development of a chemical sensor for trace As(III) ion based on immobilized gallocyanine. In abstract of International Conference: 19th Malaysian Analytical Chemistry Symposium. (SKAM 19) and 2nd Malaysian Conference on Catalysis (MyCat 2). Page 60.
  48. Nor Azah Yusof and Zainab Omar. Spectrophotometric Determination of Trace Arsenic(III) ion based on Complex Formation with Gallocyanine. Dalam buku abstrak Simposium Kimia Analisis Malaysia ke 18. ms F34.
  49. Azizul Isha, Nor Azah Yusof, Mazura Abdul Malik and Hazlina Hamdan. Simultaneous Spectrophotometric Determination of Pb(II) and Cd(II) using artificial Neural Networks Based on 4-(2-pyridylazo) resorcinol. In abstract book of AsiaSense 2005 International Conference on New Techniques in Pharmaceutical and Biomedical Research. Page 50.
  50. Nor Azah Yusof and Musa Ahmad. Solid State Optical Fibre Sensor for Co(II) and Pb(II) ions In abstract book of Regional Conference For Young Chemist. 13-14/4/2004. Page 76.
  51. Azizul Isha, Nor Azah Yusof, Musa Ahmad, Deddy Suhendra and Wan Md Zin Wan Yunus. Spectrophotometric Determination of Trace V(V) Ion Based on Fatty Hydroxamic Acid. In abstract book of Regional Conference For Young Chemist. Page 36.
  52. Azizul Isha, Nor Azah Yusof, Musa Ahmad, Deddy Suhendra and Wan Md Zin Wan Yunus. Characterization of V(V) Ion Optrode Based on Fatty Hydroxamic Acid Immobilised in PVC. Dalam buku abstrak Simposium Kimia Analisis Malaysia ke 17. ms 55.
  53. Nor Azah Yusof & Musa Ahmad. Pembinaan penderia kimia gentian optic bagi pengesanan logam Co(II). Dalam buku abstrak Simposium Kimia Analisis Malaysia ke 14. ms 30.
  54. Nor Azah Yusof & Musa Ahmad. Pengesanan logam plumbum dan kobalt menggunakan kaedah analisis suntikan aliran. Dalam buku abstrak Simposium Kimia Analisis Malaysia ke 12. ms 17.
  55. Nor Azah Yusof & Musa Ahmad. Pendopan beberapa penunjuk pH di dalam membran kitosan. Dalam buku abstrak Simposium Kimia Analisis Malaysia ke 11. ms L40

(Type of Service, Role, Level, Year)

- Director of Institute of Advanced Technology (ITMA), UPM (May 2015 – June 2017)
- Chairman of development of Master in Analytical Chemistry Programme (2016-2017)
- Head of Functional Device Laboratory, ITMA. (2012-2015)
- Chairman of Workshop on Advanced Material and Nanotechnology (WAMN 2014)
- Programme Head of Sensor Technology Research Programme, UPM
- Chairman of development of Master in Forensic Science Programme
- Chairman of development of Master in Chemistry Programme
- Acting Head of Department (25/5/2010 - 11/6/2010)
- Coordinator Of MOU and Internationalization for Faculty of Science
- Head of programme (smart sensing material) under Sensor Technology Lab ITMA – 2011-
- Head of Curriculum for Chemistry Department (2009-2013)
- Internal auditor (ISO) for Faculty of Science (2003-2007)
- Committee member of Fundamental Science Congress 2011
- Committee member of Seminar Kimia Industri 2011
- Academic Advisor
- SKI (Seminar Kimia Industri) 2003, 2004 – Treasurer
- SKAM 19 and MyCat 2 (Seminar Kimia Analisis Malaysia 19) 2006– Treasurer
- Sub-Editor for Malaysian Journal of Analytical Science (SKAM 19)
- Ahli Jawatankuasa Jaminan Kualiti Fakulti Sains (2004-2007)
- AJK Biro Pendidikan Kelab Pegawai Jabatan Kimia
- AJK Teknikal dan Sekretariat Hari Kualiti Fakulti Sains 2005
- AJK Kurikulum Jabatan Kimia – 2004-2007
- Assessor for practical Teaching for Bachelor of Science with Educational Programme. 2006,2007 and 2009
- Assessor for Industrial Training 2009
- Regional Conference on Biosensor 2008 – Committee member
- Sub-Editor for proceeding of Regional Conference on Biosensor 2008
- Seminar Kimia Industri ke 13 – Secretary 2
- Fellow member of Institute of Bioscience -2007-2009
- AJK Kurikulum Fakulti Sains – 2009-2011
- AJK Penilaian Pengajaran Fakulti Sains (2009-2010)
- Jawatankuasa panel hakim pertandingan rekacipta dan inovasi sekolah 2011
- Pengerusi Penilai Buku Teks KBSM 2012 (Kimia)

### **Invited/Plenary Speakers**

1. Workshop, 'DNA Biosensor: Recent Trends and Future Direction'. 22-23/4/2009. Institute of Nano Electronic Engineering, UniMAP, Perlis.
2. Fundamental Science Congress 2010, Fakulti Sains, UPM (18-19/5/2010)
3. Lecture series, Photonic Lecture Series, 'Optical Sensors for Environmental Monitoring, Medical diagnostic and Food Quality Control'. WipNet, Fakulti Kejuruteraan, UPM (23/7/2010)
4. Workshop 'Understanding DNA Biomolecule for Lab on Chip Application'. 27/6/2011. Institute of Nano Electronic Engineering, UniMAP, Perlis.
5. 7<sup>th</sup> International Symposium on Nanomedicine, 7-9/11/2013, Development of silicon nanowires/gold nanoparticles modified electrode for oligonucleotide sequence of dengue virus detection, Kitakyushu, Japan
6. 11<sup>th</sup> Asian Conference on Chemical Sensors, 16-18/11/2015. Immuno Nanosensor for Naked Eye Detection of Tuberculosis, Penang, Malaysia.
7. 4TH INTERNATIONAL SYMPOSIUM ON APPLIED ENGINEERING AND


SCIENCES (SAES2016), 17-18/11/2016. Affordable, non-invasive and sensitive detection system for mycobacterium tuberculosis, Kitakyushu, Japan

8. MINI SYMPOSIUM: *PARTNERSHIPS IN THE DEVELOPMENT OF DIAGNOSTICS AND INSTRUMENTATION FOR INFECTIOUS DISEASES* in conjunction with the UNIVERSITY OF MALAYA 111TH ANNIVERSARY, 13/8/2016, Development of DNA biosensor for Dengue detection

9. Conference on development of chemical sensor for supporting Indonesian industry, 5-6/10/2016, Affordable, non-invasive and sensitive detection system for mycobacterium tuberculosis, Faculty of Sciences and Technology Airlangga University, Surabaya, Indonesia.

10. Conference on Recent Advancement In Science and Technology (ICoRAST2017) on 7-9 November 2017, Affordable, non-invasive and sensitive detection system for mycobacterium tuberculosis, Melaka Malaysia

11. Newton Fund Workshop on Sensor Technologies for Smart Future Farming, 11-14/12/2017, Nanotechnology in Detection and Control of *Ganoderma boninense*, Kuching, Serawak

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