EXECUTIVE SUMMARY

Dr. Muhammad Khalis bin Abdul Karim is from Seremban, Negeri Sembilan. He went to Sekolah Kebangsaan King George V, Seremban before studying in boarding school of Sekolah Menengah Sains Selangor, Cheras in 1998 - 2002. He obtained his B.Sc (Hons) in Diagnostic Imaging and Radiotherapy from Universiti Kebangsaan Malaysia (UKM) in 2008 and M.Sc in Physics from Universiti Teknologi Malaysia (2013). In December 2016, he completed his Ph.D in Physics at the Universiti Teknologi Malaysia (UTM).

Dr. Khalis started his career as Executive cum Radiographer with a private hospital, Mahkota Medical Centre in 2008 before joining Jabatan Kesihatan Negeri Johor as a Medical Physicist in year 2009. In 2016, he was promoted as a Senior Medical Physicist and the Chief Physicist of Radiology services in National Cancer Institute before resigning in September 2017. Currently, he is a Senior Lecturer in Department of Physics of Universiti Putra Malaysia (UPM). Khalis has expertise in medical physics particularly radiation dosimetry in medical imaging and has been appointed as an advisory member in several technical committee during his work. Aside from working in clinical environment, Khalis also actively involved giving lecture in several workshops on radiation protection and nuclear security.

Dr Khalis is an active researcher in the faculty and has received several grants from various national/international sources. To date, Dr Khalis has had more than 10 grants including international, national and university grants amounting to a total of RM 1.01 million. In term of publication, Dr. Khalis has authored 75 international journals (with impact factor ranging from 1.2 to 5.1), 20 international and national proceedings. He has reviewed 35 international journal papers from reputable and well-established publisher.

Some of his achievements, he has received Excellent Service Award in 2013 and 2019 conferred by Federal Government and Universiti Putra Malaysia, respectively. He has been awarded Chancellor's Award conferred during UTM 58th Convocation in 2017. He was also selected by the Dean of School of Graduate Studies as the best postgraduate student in the Physics Doctoral programme.

His current research interests include radiation physics, medical imaging, radiation dosimeters and image processing. Khalis has worked for the last five years on the CT dosimetry. This has led to highly encouraging results for optimizing radiation dose in CT. He is a member of Medical Physicist Profession Development Committee and Radiation Protection Committee of Ministry of Health of Malaysia. His professional affiliations include a member of International Society of Radiation Physics (ISRP) and American Association of Physicist in Medicine (AAPM).

1. **Name** : Muhammad Khalis Abdul Karim
2. **Department** : Physics
3. **Faculty** : Science
4. **Field of Specialization** : Medical Physics and Radiation Physics
5. **Staff No.** : A04729
6. **I.C. No.** : 851016-05-5205
7. **Date of Birth** : 16 October 1985
8. **Tel. No. (Office**) : +603-9769 6671
   Tel. No. (Mobile) : +6019-2140612

9. **Date of appointment by MOH** : 14/02/2009
10. **Date of appointment by UPM** : 1/11/2017

11. Educational Background

No	Institution	Year	Discipline	Level
1	Universiti Teknologi Malaysia	2017	Physics	PhD
2	Universiti Teknologi Malaysia	2014	Physics	MSc.
3	Universiti Kebangsaan Malaysia	2008	Diagnostic Imaging & Radiotherapy	BSc.

12. Teaching Activities

No.	Course Code	Course Name	Number of Students	Semester/ Academic Year
1.	PHY4504	Fizik Nuklear	20	2-2020/2021
2.	PHY3104	Fizik II	34	2-2020/2021
3.	FSA4002	Pengurusan Inovasi Dan Teknologi Untuk Saintis	42	1-2020/2021
4.	PHY3104	Fizik II	21	1-2020/2021
5.	PHY4504	Fizik Nuklear	36	2-2019/2020
6.	PHY3304	Prinsip Sistem Pengukuran	29	2-2019/2020
7.	PHY4504	Fizik Nuklear	10	1-2019/2020
8.	FSA4002	Pengurusan Inovasi Dan Teknologi Untuk Saintis	49	1-2019/2020
9.	PHY4504	Fizik Nuklear	29	2-2018/2019
10.	PHY3104	Fizik Ii	37	2-2018/2019
11.	PHY4995	Amali Lanjutan	13	1-2018/2019
12.	PHY4502	Fizik Sinaran Dan Radiobiologi	31	1-2018/2019
13.	PHY4504	Fizik Nuklear	13	2-2017/2018
14.	PHY4502	Fizik Sinaran Dan Radiobiologi	37	2-2017/2018

13. Supervision Activities

I. Supervision of Master students as Chairman

Category of Graduate Student	Role	Name of Student	Year Expected Graduated	Status
MSc (UPM)	Chairman	Nur Aimi Adibah Yusoff	2022	On-going
MSc (UPM)	Chairman	Amirul Fakhruddin Jamaludin	2022	On-going

II. Supervision of PhD students as Chairman or members

Category of Graduate Student	Role	Name of Student	Year Expected Graduated	Status
PhD (UPM)	Chairman	Nurin Syazwina Mohd Haniff	2023	On-going
PhD (UPM)	Chairman	Mohd Esnu Khalidi Abd Halim	2024	On-going
PhD (UPM)	Chairman	Mohammad Asmawi Mohammad Ariffin	2024	On-going
PhD (UPM)	Chairman	Zunaide Kayun @ Farni	2021	On-going
PhD (UPM)	Chairman	Osama Bagi Aljewaw	2022	On-going
PhD (UPM)	Chairman	Izdihar Kamal	2022	On-going
PhD (UPM)	Co-Chair	Tity Nazleen	2021	On-going
PhD (UPM)	Co-Chair	Husam Mohamed	2021	On-going
PhD in Science (UKM)	Co-chair	Mardhiyati Mohd Yunus	2022	On-going
PhD in Science (UiTM)	Co-chair	Nur Fatihah Ronny Sham	2022	On-going

III. Graduate PhD and Master students

Category of Graduate Student	Role	Name of Student	Year Expected Graduated	Status
MSc (UPM)	Chairman	Siti Fairuz Mat Radzi	2021	Graduated
PhD (UPM)	Chairman	Hanif Haspi Harun	2021	Graduated
PhD (UPM)	Chairman	Nor Azura Muhammad	2021	Graduated

14. Publication Activities

I. List of articles published in Citation Journal

No.	Year	Title	Index
1	2016	Karim, M.K.A.; Hashim, S.; Bradley, D.A.; Bakar, K.A.; Haron, M.R.; Kayun, Z. Radiation doses from computed tomography practice in Johor Bahru, Malaysia. Radiat. Phys. Chem. 2016, 121, 6974,doi:10.1016/j.radphyschem.2015.12.020.	JCR
2	2015	Mhareb MHA, Hashim S, Ghoshal SK, Alajerami YSM, Saleh MA, Azizan SAB, MKA Karim. Influences of dysprosium and phosphorous oxides co-doping on thermoluminescence features and kinetic parameters of lithium magnesium borate glass. 2015;305(2):469–77.	JCR
3	2016	K A Bakar, H Muhammad, A Sabarudin, W C Ang, N A Bahruddin, S.H.; Karim, M.K.A.; Hashim, S.; Bakar, K.A.; Muhammad, H.; Sabarudin, A.; Ang, W.C.; Bahruddin, N.A. Establishment of multi-slice computed tomography (MSCT) reference level in Johor, Malaysia. In Proceedings of the Journal of Physics: Conference Series; IOP Publishing, 2016; Vol. 694, p. 12033.	Scopus
4	2016	M.K.A.Karim, A.Sabarudin, D.A.Bradley, N.A Bahruddin, S.H.; Karim, M.K.A.; Hashim, S.; Sabarudin, A.; Bradley, D.A.; Bahruddin, N.A. Evaluating organ dose and radiation risk of routine CT examinations in Johor Malaysia. Sains Malaysiana 2016, 45, 567–573.	JCR
5	2016	Karim MKA, Hashim S, Bradley DA, Bahruddin NA, Ang WC, Salehhon N, et al. Assessment of knowledge and awareness among radiology personnel regarding current computed tomography technology and radiation dose. In: Journal of Physics Conference Series [Internet]. IOP Publishing; 2016. P. 12031.	Scopus
6	2016	Hashim S, Karim MKA, Bakar KAA, Sabarudin A, Chin AWW, Saripan MII, Evaluation of organ doses and specific k effective dose of 64-slice CT thorax examination using an adult anthropomorphic phantom. Radiat Phys Chem. 2016;126:14–20.	Scopus
7	2016	Mhareb MHA, Hashim S, Ghoshal SK, Alajerami YSM, Bqoor MJ, Hamdan AI, Karim MKA. Effect of Dy2O3impurities on the physical, optical and thermoluminescence properties of lithium borate glass. J Lumin. 2016;177(May):366–72.	JCR
8	2016	Bahruddin NA, Hashim S, Karim MKA, Sabarudin A, Ang WC, Salehhon N, et al. Radiation dose to physicians' eye lens during interventional radiology. In: Journal of Physics: Conference Series. 2016. P. 5–9.	JCR
9	2017	Musa, Y.; Hashim, S.; Karim, M.K.A.; Bakar, K.A.; Ang, W.C.; Salehhon, N. Response of optically stimulated luminescence dosimeters (OSLDs) subjected to X- ray photons in diagnostic range. J. Phys. Conf. Ser. 2017, 012001, 1–2.	Scopus
10	2017	Musa, Y.; Hashim, S.; Bradley, D.A.; Karim, M.K.A.; Hashim, A. Reproducibility assessment of commercial optically stimulated luminescence system in diagnostic X-ray beams. J. Radioanal. Nucl. Chem. 2017, 314, 2029–2036,	JCR

		doi:10.1007/s10967-017-5571-9.	
11	2017	Karim, M.K.A.; Hashim, S.; Bakar, K.A.; Bradley, D.A.; Ang, W.C.; Bahrudin, N.A.; Mhareb, M.H.A. Estimation of radiation cancer risk in CT-KUB. Radiat. Phys. Chem. 2017, 137, 130–134, doi:10.1016/j.radphyschem.2016.10.024.	JCR
12	2017	Ang WC, Hashim S, Karim MKA, Bahruddin NA, Salehhon N, Musa Y. Adaptive iterative dose reduction (AIDR) 3D in low dose CT abdomen-pelvis: Effects on image quality and radiation exposure. In: Journal of Physics: Conference Series. IOP Publishing; 2017. P. 12006.	JCR
13	2017	Salehhon N, Hashim S, Karim MKA, Ang WC, Musa Y, Bahruddin NA. 128 Slice Computed Tomography Dose Profile Measurement Using Thermoluminescent Dosimeter. J Phys Conf Ser [Internet]. 2017;851(1):012002.	JCR
14	2018	Musa, Y.; Hashim, S.; Ghoshal, S.K.K.; Bradley, D.A.A.; Ahmad, N.E.E.; Karim, M.K.A.; Hashim, A.; Kadir, A.B.. B.A. General Radiographic Attributes of Optically Stimulated Luminescence Dosimeters: A Basic Insight. Radiat. Phys. Chem. 2018, 147, 1–6, doi:10.1016/j.radphyschem.2018.01.022.	JCR
15	2018	Karim, M.K.A.; Rahim, N.A.; Matsubara, K.; Hashim, S.; Mhareb, M.H.A.; Musa, Y. The effectiveness of bismuth breast shielding with protocol optimization in CT Thorax examination. J. Xray. Sci. Technol. 2019, 27, 139–147, doi:10.3233/XST-180397.	JCR
16	2019	Musa, Y.; Hashim, S.; Ghoshal, S.K.; Ahmad, N.E.; Bradley, D.A.; Karim, M.K.A.; Sabarudin, A. Effectiveness of Al2O3:C OSL dosimeter towards entrance surface dose measurement in common X-ray diagnostics. Radiat. Phys. Chem. 2019, doi:10.1016/j.radphyschem.2019.108418.	JCR
17	2019	Sabarudin, A.; Siong, T.W.; Chin, A.W.; Hoong, N.K.; Karim, M.K.A. A comparison study of radiation effective dose in ECG-Gated Coronary CT Angiography and calcium scoring examinations performed with a dual-source CT scanner. Sci. Rep. 2019, 9, 4374, doi:10.1038/s41598-019-40758-5.	JCR
18	2019	Muhammad, N.A.A.; Karim, M.K.A.K.A.; Hassan, H.A.A.; Kamarudin, M.A.A.; Wong, J.H.D.H.D.; Ibahim, M.J.J. Estimation of effective dose and organ cancer risk from paediatric computed tomography thorax – Abdomen – Pelvis examinations. Radiat. Phys. Chem. 2019, 165, 108438, doi:10.1016/j.radphyschem.2019.108438.	JCR
19	2019	Karim, M.K.A.; Sabarudin, A.; Muhammad, N.A.; Ng, K.H. A comparative study of radiation doses between phantom and patients via CT angiography of the intra-/extra-cranial, pulmonary, and abdominal/pelvic arteries. Radiol. Phys. Technol. 2019, 12, 1–8, doi:10.1007/s12194-019-00532-8.	Scopus
20	2019	Isa, I.N..; Rahmat, S.M.S.; Dom, S.M.; Kayun, Z.; Karim, M.K.. The effects of mis-centering on radiation dose during CT head examination: A phantom study. J. Xray. Sci. Technol. 2019, 27, 631–639, doi:10.3233/XST-190491.	JCR
21	2020	Gan, Y.S.; Sabarudin, A.; Nasser, K.M.; Hamid, H.A.; Zain, M.M.; Karim, M.K.A. Radiation dose comparisons in CT thorax, CT abdomen and CT thorax-abdomen-pelvis (TAP) between 640-and 160-slice computed tomography (CT) scanners. J.	MYCITE

		Sains Kesihat. Malaysia (Malaysian J. Heal. Sci. 2020, 18.	
22	2020	SHAHRIL SHAMSUL, AKMAL SABARUDIN, HAMZAINI ABDUL HAMID, NORZAILIN ABU BAKAR, O.M.& M.K.A.K.; Imej, K.; Berkomputer, T.; Koronari, A.; Mesin, M.; Hirisan, P.; Khalis, M.; Karim, A.; SHAMSUL, M.S.M.; Sabarudin, A.; et al. Image Quality of Coronary CT Angiography (CCTA) using 640-slice Scanner : Qualitative and Quantitative Assessments of Coronary Arteries Visibility. J. Sains Kesihat. Malaysia 2020, 18, 49–57.	MYCiTE
23	2020	Harun, H.H.; Abdul Karim, M.K.; Abbas, Z.; Abdul Rahman, M.A.; Sabarudin, A.; Ng, K.H.; Karim, M.K.A.; Abbas, Z.; Muniandy, S.C.; Sabarudin, A.; et al. Association of radiation doses and cancer risks from ct pulmonary angiography examinations in relation to body diameter. Diagnostics 2020, 10, 681, doi:10.3390/diagnostics10090681.	JCR
24	2020	Radzi, S.F.M.; Karim, M.K.A.; Saripan, M.I.; Abd Rahman, M.A.; Osman, N.H.; Dalah, E.Z.; Noor, N.M.; Mat Radzi, S.F.; Abdul Karim, M.K.; Saripan, M.I.; et al. Impact of Image Contrast Enhancement on Stability of Radiomics Feature Quantification on a 2D Mammogram Radiograph. IEEE Access 2020, 8, 127720–127731, doi:10.1109/ACCESS.2020.3008927.	JCR
25	2020	Harun, H.H.; Karim, M.K.A.A.; Abbas, Z.; Sabarudin, A.; Muniandy, S.C.; Razak, H.R.A.A.; Ng, K.H. The influence of iterative reconstruction level on image quality and radiation dose in CT pulmonary angiography examinations. Radiat. Phys. Chem. 2021, 178, 108989, doi:10.1016/j.radphyschem.2020.108989.	JCR
26	2020	Bagi Aljewaw, O.; Karim, M.K.A.; Mohamed Kamari, H.; Mohd Zaid, M.H.; Mohd Noor, N.; Che Isa, I.N.; Abu Mhareb, M.H.; Aljewaw, O.B.; Karim, M.K.A.; Kamari, H.M.; et al. Impact of dy2o3 substitution on the physical, structural and optical properties of lithium–aluminium–borate glass system. Appl. Sci. 2020, 10, 8183, doi:10.3390/APP10228183.	JCR
27	2020	Muhammad, N.A.; Abdul Karim, M.K.; Abu Hassan, H.; Ahmad Kamarudin, M.; Ding Wong, J.H.; Ng, K.H. Diagnostic Reference Level of Radiation Dose and Image Quality among Paediatric CT Examinations in A Tertiary Hospital in Malaysia. Diagnostics 2020, 10, 591, doi:10.3390/diagnostics10080591.	JCR
28	2020	H H Harun Z Abbas, A Sabarudin, S C Muniandy, M J Ibahim, M.K.A.K. Effect of iterative reconstruction algorithm levels on noise index and figure-of-merit in CT pulmonary angiography examinations. J. Xray. Sci. Technol. 2020.	JCR
29	2020	Shaffiq Said Rahmat, S.M.; Abdul Karim, M.K.; Che Isa, I.N.; Abd Rahman, M.A.; Noor, N.M.; Hoong, N.K.; Rahmat, S.M.S.S.; Karim, M.K.A.; Isa, I.N.C.; Abd Rahman, M.A.; et al. Effect of miscentering and low-dose protocols on contrast resolution in computed tomography head examination. Comput. Biol. Med. 2020, 123, 103840, doi:10.1016/j.compbiomed.2020.103840.	JCR
30	2020	Uthandi, D.; Sabarudin, A.; Mohd, Z.; Rahman, M.A.A.; Karim, M.K.A. Effectiveness of Post-Mortem Computed Tomography (PMCT) in Comparison with Conventional Autopsy: A Systematic Review. Curr. Med. Imaging 2020, 16, 669–676, doi:10.2174/1573405615666190821115426.	JCR
31	2020	Edgar, M.K.A Karim, Salman Khan, Nadeem Iqbal, M. A. Abd Rahman, -	JCR

		Prediction of Sumoylation Sites Using Deep Neural Network with Discriminative Features Citation-Indexed Journal – Science Citation Index (JCR), Full Paper, Accepted, Tech Science Press, International, [1-15], , 2021	
32	2020	Khan R, Zakarya M, Khan AA, Rahman IU, Abd Rahman MA, Karim MKA, et al. A Heuristic Approach for Finding Similarity Indexes of Multivariate Data Sets. IEEE Access. 2020;8:21759–69.	JCR
33	2021	Hasan, N.; Sham, N.F.R.; Karim, M.K.A.; Fuad, S.B.S.A.; Hasani, N.A.H.; Omar, E.; Ibahim, M.J. Development of custom lead shield and strainer for targeted irradiation for mice in the gamma cell chamber. Sci. Rep. 2021, 11, 1–7.	JCR
34	2021	Alajerami, Y.S.M.; Morsy, M.A.; Mhareb, M.H.A.; Sayyed, M.I.; Imheidat, M.A.; Hamad, M.K.; Karim, M.K.A. Structural, optical, and radiation shielding features for a series of borate glassy system modified by molybdenum oxide. Eur. Phys. J. Plus 2021, 136, 583, doi:10.1140/epjp/s13360-021-01582-x.	JCR
35	2021	Radzi, S.F.M.; Karim, M.K.A.; Saripan, M.I.; Rahman, M.A.A.; Isa, I.N.C.; Ibahim, M.J.; Fairuz, S.; Radzi, M.; Khalis, M.; Karim, A.; et al. Hyperparameter Tuning and Pipeline Optimization via Grid Search Method and Tree-Based AutoML in Breast Cancer Prediction. J. Pers. Med. 2021, 11, 978, doi:10.3390/jpm11100978.	JCR
36	2021	Harun, H.H.; Abdul Karim, M.K.; Abd Rahman, M.A.; Abdul Razak, H.R.; Che Isa, I.N.; Harun, F. Establishment of CTPA Local Diagnostic Reference Levels with Noise Magnitude as a Quality Indicator in a Tertiary Care Hospital. Diagnostics 2020, 10, 680, doi:10.3390/diagnostics10090680.	JCR
37	2021	Kayun, Z.; Karim, M.K.A.; Harun, H.H.; Shaari, A.H.; Mahmud, R.; Hamid, H.A.; Sabarudin, A.; Chew, M.T.; Abdul Karim, M.K.; Harun, H.H.; et al. Radiation doses and size-specific dose estimate from CT brain examinations according to head sizes in a tertiary hospital in Malaysia. Radiat. Phys. Chem. 2021, 189, 109694, doi:10.1016/J.RADPHYSCHEM.2021.109694.	JCR
38	2021	Muhammad, N.A.; Kayun, Z.; Abu Hassan, H.; Wong, J.H.D.; Ng, K.H.; Karim, M.K.A. Evaluation of Organ Dose and Image Quality Metrics of Pediatric CT Chest-Abdomen-Pelvis (CAP) Examination: An Anthropomorphic Phantom Study. Appl. Sci. 2021, 11, 2047, doi:10.3390/app11052047.	JCR
39	2021	Kamal, I.; Karim, M.K.A.; Awang Kechik, M.M.; Ni, X.; Razak, H.R.A. Evaluation of Healthcare Science Student Learning Styles Based VARK Analysis Technique. Int. J. Eval. Res. Educ. 2021, 10, 255–261.	Scopus
40	2021	Karim, M.K.A.A.; Harun, H.H.; Kayun, Z.; Aljewaw, O.B.; Azizan, S.H.N.N.; Rafiz, N.F.N.M.; Muhammad, N.A. Paediatric radiation dose and cancer risk associated with body effective diameter during CT thorax examination. Radiat. Phys. Chem. 2021, 188, 109685, doi:10.1016/j.radphyschem.2021.109685.	JCR
41	2021	Harun, H.H.; Abdul Karim, M.K.; Muhammad, N.A.; Awang Kechik, M.M.; Chew, M.T.; Talib, Z.A.; .; et al. Task-based assessment on various optimization protocols of computed tomography Pulmonary Angiography examination. Radiat. Phys. Chem. 2021, 188, 109692, doi:10.1016/j.radphyschem.2021.109692.	JCR

42	2021	Kamal, I.; Karim, M.K.A.; Harun, H.H.; Abdul Razak, H.R.; Jian, L.Y.; Chyi, J.L.Y.; Kechik, M.M.A. Evaluation of radiation attenuation properties on a various composition of polydimethylsiloxane (PDMS) for fabrication of kidney phantom. Radiat. Phys. Chem. 2021, 189, 109661, doi:10.1016/j.radphyschem.2021.109661.	JCR
43	2021	Haniff, N.S.M.; Abdul Karim, M.K.; Osman, N.H.; Saripan, M.I.; Che Isa, I.N.; Ibahim, M.J. Stability and Reproducibility of Radiomic Features Based Various Segmentation Technique on MR Images of Hepatocellular Carcinoma (HCC). Diagnostics 2021, 11, 1573, doi:10.3390/diagnostics11091573.	JCR
44	2021	Muhammad, N.A.; Sabarudin, A.; Ismail, N.; Karim, M.K.A; Sabaruddin, A.; Ismail, N.; Karim, M.K.A.A. A systematic review and meta-analysis of radiation dose exposure from computed tomography examination of thorax-abdomen-pelvic regions among paediatric population. Radiat. Phys. Chem. 2021, 179, 109148, doi:10.1016/j.radphyschem.2020.109148.	JCR
45	2021	Kayun, Z.; Karim, M.K.A.A.; Muhammad, N.A.; Aljewaw, O.B.; Chew, M.T.; Harun, H.H.; Tsuey, C.M.; Harun, H.H. Implication of applying iterative reconstruction on Low Contrast Detectability in CT brain examination. Radiat. Phys. Chem. 2021, 188, 109676, doi:10.1016/J.RADPHYSCHEM.2021.109676.	JCR
46	2021	ALJEWAW, O.B.; KARIM, M.K.A.; ZAID, M.H.M.; HALIMAH, M.K.; NOOR, N.M.; MHAREB, M.H.A.; ALAJERAMI, Y.S. Impact of Al2 O3 and Dy2 O3 Substitution on the Physical, Structural and Radiation Shielding Properties of Li2 O-B2 O3 Glass System. Sains Malaysiana 2021, 50, 3127–3138.	JCR
47	2021	Harun, H.H.; Roslan, M.; Kasim, M.R.M.; Nurhidayu, S.; Hanan, Z.; Kusin, F.M.; Khalis, M.; Karim, A.; Ash'aari, Z.H.; Kusin, F.M.; et al. Association of Physicochemical Characteristics, Aggregate Indices, Major Ions, and Trace Elements in Developing Groundwater Quality Index (GWQI) in Agricultural Area. Int. J. Environ. Res. Public Health 2021, 18, 4562.	JCR
48	2021	Abdul Halim AA, Andrew AM, Mohd Yasin MN, Abd Rahman MA, Jusoh M, Veeraperumal V, Karim MKA. Existing and Emerging Breast Cancer Detection Technologies and Its Challenges: A Review. Appl Sci. 2021;11(22):10753.	JCR
49	2021	Kandan V, Hassan MF, Omar N, Shahar HK, Mohamad F, Karim MKA, et al. Advanced glow curve analysis of fabricated fibres for various sources of ionizing radiation. Radiat Phys Chem. 2021;178:108981.	JCR
50	2021	Bundak CEA, Abd Rahman MA, Karim MKA, Osman NH, Abdul Karim MK, Osman NH. Fuzzy rank cluster top k Euclidean distance and triangle-based algorithm for magnetic field indoor positioning system. Alexandria Eng J [Internet]. 2021 Sep;1(May):1–25.	JCR
51	2021	Tekin HO, Al-Buriahi MS, Issa SAM, Zakaly HMH, Issa B, Kebaili I, Karim MKA. Effect of Ag2O substituted in bioactive glasses: A synergistic relationship between antibacterial zone and radiation attenuation properties. J Mater Res Technol. 2021;	JCR
52	2021	Izdihar K, Razak HRA, Supion N, Karim MKA, Osman NH, Norkhairunnisa M, et al. Structural , Mechanical , and Dielectric Properties of Polydimethylsiloxane and	JCR

		Silicone Elastomer for the Fabrication of Clinical-Grade Kidney Phantom. Appl Sci. 2021 Feb 1;11(1172):1.	
53	2021	Khan R, Zakarya M, Khan AA, Rahman IU, Abd Rahman MA, Karim MKA, et al. A Heuristic Approach for Finding Similarity Indexes of Multivariate Data Sets. IEEE Access. 2020;8:21759–69.	JCR
54	2022	Kamal, I.; Razak, H.R.A.; Abdul Karim, M.K.; Mashohor, S.; Liew, J.Y.C.; Low, Y.J.; Zaaba, N.A.; Norkhairunnisa, M.; Rafi, N.A.S.M. Mechanical and Imaging Properties of a Clinical-Grade Kidney Phantom Based on Polydimethylsiloxane and Elastomer. Polymers (Basel). 2022, 14, 535, doi:10.3390/polym14030535.	JCR
55	2022	Aljewaw, O.B.; Karim, M.K.A.; Kamari, H.M.; Zaid, M.H.M.; Salim, A.A.; Mhareb, M.H.A. Physical and spectroscopic characteristics of lithium-aluminium-borate glass: Effects of varying Nd2O3 doping contents. J. Non. Cryst. Solids 2022, 575, 121214, doi:10.1016/j.jnoncrysol.2021.121214.	JCR

II. List of articles published in Non – Citation Journal

No.	Title
1.	Kamal, I.; Said, M.A.; Batumalai, J.; Razak, H.R.A.; **Karim, M.K.A**. The Effective Dose Estimation of Patients Administered with 18F-FDG and Ga-68 DOTATATE in PET/CT Examination Associated with Gender and Weight. Phys. Technol. Med. 2020, 1, 15–21.
2.	Kamal, I.; Salehhon, N.; Hashim, S.; Musa, Y.; **Karim, M.K.A**. Entrance Surface Dose Measurement and Lifetime Attribute Risk Analysis from Postero-anterior Chest X-ray Imaging via Direct and Indirect Measurement. Phys. Technol. Med. 2021, 1, 20–26.

III. List of paper that were presented

NO	CONFERENCES/SEMINARS/SYMPOSIUM	Year	Venue
1.	N. S. M. Haniff, M. K. B. A. Karim, N. S. Ali, M. A. A. Rahman, N. H. Osman and M. I. Saripan, "Magnetic Resonance Imaging Radiomics Analysis for Predicting Hepatocellular Carcinoma," 2021 International Congress of Advanced Technology and Engineering (ICOTEN), 2021, pp. 1-5, doi: 10.1109/ICOTEN52080.2021.9493533.	2021	Virtual Conference
2.	Izdihar, K., Karim, M.A., Aresli, N.N., Radzi, S.F.M., Sabarudin, A., Yunus, M.M., Rahman, M.A.A. and Shamsul, S., 2021, July. Detection of Novel Coronavirus from Chest X-Ray Radiograph Images via Automated Machine Learning and CAD4COVID. In 2021 International Congress of Advanced Technology and Engineering (ICOTEN) (pp. 1-4). IEEE.	2021	Virtual Conference
3.	Presenter (Oral) at 2nd International Forum on Advances in Radiation Physics held at Sunway University, Kuala Lumpur, Malaysia, 2019	2019	Sunway University, Kuala Lumpur
4.	Participant in International Day of Medical Physics 2019 at Dataran Siti Khadijah, UMMC, Malaysia, 2019	2019	Dataran Siti Khadijah, UMMC
5.	Participant in "Top Drawer Proposal" Workshop 2019 at Fakulti Sains,	2019	UPM

	Universiti Putra Malaysia, Malaysia		
6.	Invited expert at SIRT (Yittrium-90 Radioembolization Workshop), Magdeburg, Germany, 2019	2019	Magdeburg, Germany
7.	Participant in 17th SEACOMP & 3rd PIT-FMB at Bintang Bali Resort, Bali, Indonesia, 2019	2019	Bali, Indonesia
8.	Presenter titled 'Practices and Regulation for Effectiveness on Nuclear Security Control of Radioactive Sources at Medical Facilities in Malaysia'. IAEA International Conference on the Security of Radioactive Material	3 – 7 Dec 2018	Vienna, Austria
9.	Nor Syaza Zaini, Zanariah Mohd, Muhammad Khalis Abdul Karim, 'Magnetic Susceptibility Artefact Induced by Personal Care Product with Gold Nanoparticles on Brain Magnetic Resonance Images'. 18th Asia-Oceania Congress of Medical Physics (AOCMP) and 16th South-East Asia Congress of Medical Physics (SEACOMP)	12 – 14 Nov 2018,	Bangsar South City, Kuala Lumpur, Malaysia
10.	Yahaya Musa, Suhairul Hashim, Muhammad Khalis Abdul Karim, 'Direct and indirect entrance surface dose measurement in X-ray diagnostics using nanoDots OSL dosimeter'. 18th Asia-Oceania Congress of Medical Physics (AOCMP) and 16th South- East Asia Congress of Medical Physics (SEACOMP)	12 – 14 Nov 2018	Bangsar South City, Kuala Lumpur, Malaysia
11.	Muhammad Khalis Abdul Karim, Noraini Abdul Rahim, Siti Norsyafiqah Mohd Mustafa, Johari Ibahim, Akmal Sabarudin, 'Assessment of the Effective Dose from Lung Cancer Screening Pilot Project in Institut Kanser Negara: A Preliminary findings'. 18th Asia-Oceania Congress of Medical Physics (AOCMP) and 16th South-East Asia Congress of Medical Physics (SEACOMP)	12 – 14 Nov 2018	Bangsar South City, Kuala Lumpur, Malaysia
12.	Muhammad Khalis Abdul Karim, Husain Murat, Hanif Haspi, Zunaide Kayun, 'A Comparison of Dose Calculation Algorithms Model in 3-Dimensional Conformal Radiotherapy (3D-CRT) Technique'. 18th Asia-Oceania Congress of Medical Physics (AOCMP) and 16th South-East Asia Congress of Medical Physics (SEACOMP)	12 – 14 Nov 2018	Bangsar South City, Kuala Lumpur, Malaysia
13.	Muhammad Khalis Abdul Karim, Husain Murat, Hanif Haspi, Zunaide Kayun, 'A Comparison of Dose Calculation Algorithms Model in 3-Dimensional Conformal Radiotherapy (3D-CRT) Technique'. 18th Asia-Oceania Congress of Medical Physics (AOCMP) and 16th South-East Asia Congress of Medical Physics (SEACOMP)	12 – 14 Nov 2018	Bangsar South City, Kuala Lumpur, Malaysia
14.	M.K.A Karim, Radiation Risk from Diagnostic Imaging: The Impact of Patient Habitus, Monte Carlo Simulation and Mathematical Model. 4th ASOMH Scientific Conference (AsiC IV) 22 – 23 May 2017, Vivatel Hotel, Kuala Lumpur	22 – 23 May 2017	Vivatel Hotel, Kuala Lumpur
15.	M.K.A. Karim, N.A.Rahim, N. A. Ngah, Z.Ramli and S.N.M. Mustafa. Evaluation of patient effective dose from National Cancer Institute (NCI), Malaysia Early Lung Cancer Screening pilot project: Preliminary findings. Radiology Asia 2017.	19 – 20 May 2017	MAX Atria @ Singapore EXPO, Singapore
16.	M.K.A. Karim, N.A. Bahruddin, N.A. Rahim, Z. Ismail, S.Hashim, K.A. Bakar. The Influence Of Patient Size On Size-Specific Dose Estimates (SSDE) of CT Abdomen- Pelvis. Radiology Asia 2017. 19 – 20 May 2017 MAX Atria @ Singapore EXPO, Singapore	19 – 20 May 2017	Singapore EXPO, Singapore

17.	M.K.A Karim, N.A Rahim, S.N.M Mustafa, N.A Ngah and Z.Ramli. Strategies for Optimizing Radiation Dose of Lung Cancer Screening Program by Using Low- Dose CT Scan (LDCT) Protocols and Dual-Energy X-Ray (DEX) Imaging Techniques. 2017 Sabah MOH Science Conventions.	20 – 22 Mac 2017	Kompleks Pentadbiran Kerajaan Persekutuan, Kota Kinabalu, Sabah.
18.	N. Salehhon, S. Hashim, M.K.A Karim, W.C Ang, Y. Musa and N. A Bahruddin. 128 slice computed tomography dose profile measurement using thermoluminescent dosimeter. 10th International Seminar on Medical Physics.	26 – 28 August 2016	Bayview Hotel Batu Ferringhi, Penang, Malaysia
19.	Y.Musa, S. Hashim, M.K.A Karim, K.A Bakar, W.C Ang and N. Salehhon. Response of optically stimulated luminescence dosimeters subjected to X-rays in diagnostic energy range. 10th International Seminar on Medical Physics	26 – 28 August 2016	Bayview Hotel Batu Ferringhi, Penang, Malaysia
20.	W.C.Ang, S Hashim, M.K.A Karim, N.A Bahruddin, N. Salehhon and Y.Musa.Adaptive iterative dose reduction (AIDR) 3D in low dose CT abdomen-pelvis: Effects on image quality and radiation exposure. 10th International Seminar on Medical Physics, 26 – 28 August 2016, Bayview Hotel Batu Ferringhi, Penang, Malaysia.	26 – 28 August 2016	Bayview Hotel Batu Ferringhi, Penang, Malaysia
21.	Akmal Sabarudin, Muhammad Khalis Abdul Karim*, Nurmalina Razak, Syahrani Unir, Bistaman Khalid, Suhairul Hashim. Radiation Dose Measurements in CT Angiography Examinations with Adult Anthropomorphic Phantom. 6th International Graduate Conference on Engineering, Science & Humanities (ICGESH) 15 – 17 August 2016, Block N24, Universiti Teknologi Malaysia, Johor. ISBN 978-967-0194-67-7	15 – 17 August 2016	Universiti Teknologi Malaysia, Johor.
22.	Nur Ashiqin Bahruddin, Muhammad Khalis Abdul Karim, Suhairul Hashim, Akmal Sabarudin, Khatijah Abu Bakar. Radiation dose measurement among radiology staffs during Fluoroscopy guided procedures. 4th International Science Postgraduate Conference 2016, 22 – 24 February 2016, Centre for Sustainable Nano Materials (CSNANO) Ibnu Sina Institue, Universiti Teknologi Malaysia, Johor. ISBN 978- 967-0194- 54-7.	22 – 24 February 2016	Universiti Teknologi Malaysia, Johor.
23.	Nasuha Salehhon, Suhairul Hashim, Muhammad Khalis Abdul Karim. Entrance Surface Dose and Cancer risk assessment in chest X-ray examination. 4th International Science Postgraduate Conference 2016, 22 – 24 February 2016, Centre for Sustainable Nano Materials (CSNANO) Ibnu Sina Institue, Universiti Teknologi Malaysia, Johor. ISBN 978- 967-0194-54-7.	22 – 24 February 2016	Universiti Teknologi Malaysia, Johor.
24.	Ang Wee Chin, Muhammad Khalis Abdul Karim, Suhairul Hashim. Chest X-ray dose assessment and comparison analysis with different Diagnostic Reference Levels (DRLs). 4th International Science Postgraduate Conference 2016, 22 – 24 February 2016, Centre for Sustainable Nano Materials (CSNANO) Ibnu Sina Institue, Universiti Teknologi Malaysia, Johor. ISBN 978-967-0194-54-7.	22 – 24 February 2016	Universiti Teknologi Malaysia, Johor.
25.	Salmiati Yunus, Abdull Rahim Mohd Yusoff, Zulkifli Yusop, Azmi Aris, Mohd Razman Salim, Shamila Azman, Davin Uy, Abdul Hamid Mar Iman, Syaiful Akhmal Saadon, Muhammad Khalis Abdul Karim. Assessment of Awareness among People in Cambodian Regarding Arsenic in Water and the Strategy for Behaviour Change. 4th International Science Postgraduate Conference 2016, 22 – 24 February 2016, Centre for Sustainable Nano Materials (CSNANO) Ibnu Sina Institue, Universiti	22 – 24 February 2016	Universiti Teknologi Malaysia, Johor.

	Teknologi Malaysia, Johor. ISBN 978-967-0194-54-7.		
26.	M.K.A.Karim, S.Hashim, and K.A.Bakar. Establishment of Multi-slice Computed Tomography (MSCT) reference level in Johor, Malaysia. 13th Southeast Asian Congress of Medical Physics, 10 – 12 December 2015, Universitas Islam Sunan Kalijaga, Yogyakarta (Indonesia).	10 – 12 December 2015	Universitas Islam Sunan Kalijaga, Yogyakarta (Indonesia).
27.	M.K.A.Karim, S.Hashim, D.A. Bradley, W.C Ang, N.A Bahrudin and N. Salehhon. Assessment of knowledge and awareness among Radiology Personnel regarding current CT technology and Radiation Doses. 13th Southeast Asian Congress of Medical Physics, 10 – 12 December 2015, Universitas Islam Sunan Kalijaga, Yogyakarta (Indonesia).	10 – 12 December 2015	Universitas Islam Sunan Kalijaga, Yogyakarta (Indonesia).
28.	N.A Bahrudin, M.K.A.Karim, S.Hashim, D.A. Bradley, K.A Bakar and A. Sabarudin. Radiation dose to the physician Eye Lens during Interventional Radiology. 13th Southeast Asian Congress of Medical Physics, 10 – 12 December 2015, Universitas Islam Sunan Kalijaga, Yogyakarta (Indonesia).	10 – 12 December 2015	Universitas Islam Sunan Kalijaga, Yogyakarta (Indonesia).
29.	M.K.A Karim, S.Hashim, K.A.Bakar, D.A. Bradley, W.C Ang and N.A Bahrudin. Radiation cancer risk In CT Urography examination. 13th International Symposium on Radiation Physics, 7 – 11 September 2015, Beijing Convention Centre, Beijing (China). ISBN 978-84-942137-5-5.	7 – 11 September 2015	Beijing Convention Centre, Beijing (China)
30.	International Convention on Medical Physics, 23 – 25 November 2013, Hotel Primiera, Kuala Lumpur	23 – 25 November 2013	Hotel Primiera, Kuala Lumpur
31.	Persidangan Fizik Perubatan Kementerian Kesihatan Malaysia, 16 -17 September 2013, Permaisuri MITC Hotel, Melaka	16 -17 September 2013	Permaisuri MITC Hotel, Melaka
32	M.K.A Karim, H. Wagiran, S.R. Shahudin and N.F Othaman. Assessment of Heavy Metal and Selected Mineral Content from Organically and Conventionally grown Brassicas. 9th Johor Scientific Meeting, 23 – 25 September 2013, KSL Hotel & Resort, Johor	23 – 25 September 2013	,KSL Hotel & Resort, Johor

15. Research Activities

I. Project Leader

No.	Title	Sponsor / Grant	Amount (RM)	Year
1.	Radiomic Features of Hepatocelluar Carcinoma via stable 3-D printed Anthropomorphic Phantom	UPM-GPB	122,000	2019
2.	Development of stable CT phantom for dose characterization	UPM-IPM	60,000	2019
3.	Low contrast detectability and diagnostic accuracy of Computed Tomography imaging system via Intrinsic Performance Metrics Framework	MOHE-UPM	139,800	2020
4.	UPM publication incentive grant 2019	UPM	4,000	2020
5.	UPM publication incentive grant 2021	UPM	32,000	2022

II. Co-Researcher

No.	Title	Sponsor / Grant	Amount (RM)	Year
1.	Investigating the role of eosinophils in the progression of breast cancer in mouse model post-radiotherapy treatment	MOHE-UITM	116,226.42	2016
2.	Hybrid Algorithmic Game Theory and Machine Learning for Optimal Pricing Mechanism of Cash Crop Trading	MOHE-UPM	136,100	2020
3.	Multi-slice Scanning Computed Tomography Diagnostic Reference Levels Initiation in Malaysia.	MOHE-UTM	83,000	2019
4.	Establishment of paediatric CT protocols based on individual specific size for dose optimization in Malaysian paediatric population.	MOHE-USM	152,800	2019
5.	Investigation of the role of CD8+ and its chemokine in radio-resistant breast cancer cell to gamma-ray irradiation using the 3D culture system	MOHE-UITM	179,800	2019
6.	Enhancement on thermal and optical properties of willemite glass-ceramic incorporated dysprosium oxide nanoparticles for possible application in phosphor host technology	MOHE-UPM	83,000	2019

16. Consultancy Project

Project Title	Role	Year
Hospital Kuala Lumpur	- Research fellow and mentor for research project	2018 - 2021
Kementerian Pendidikan Malaysia	- STPM (Pemeriksa, Penggubal dan Penaksir Kertas Soalan STPM bagi subjek Fizik)	2018 - now
Kementerian Kesihatan Malaysia	- Project QUADDRiL - RPO Course - Research mentor - Committee member for National DRL	2016 - now
International Atomic Energy Agency	- Expert / Chief investigator CRP for Dose Projection tools project - Research fellow at Universitiklinikum Magdeburg, Liam GMBH - ToT of AQD project dose management	2020 – 2024

17. Recognition received internationally and in university

Recognition (Local)	1. **Judge/Jury** for Pertandingan Inovasi Putra@Serdang, 2020 2. **Invited Speaker** in the Digital Radiography Course, at Bangi Resort Hotel on 15 February 2020, organized by KPJUC, 2020. 3. **Judge/Jury** for HKL Radiology Research Day, 2020 4. **Lecturer/advisor** of the International Physics Tour Outreach 2.0 (IPTO 2.0) Programme in Turkey (Ataturk University, Erzurum Technical University, Istanbul University & Maltepe University), 2019 5. **Invited Speaker** for Physics Lecture Series No.4, Jabatan Fizik, UPM, 2019 6. **Module Leader** (The Coffee is Hot) for *Lonjakan Fizik SPM 2020 (Fasa 1), 2019* 7. **External Examiner** for Bachelor of Medical Imaging final Viva for Cohort 5, KPJUC, 2019 8. **Project leader/Advisor** for Program Pemantapan Skor A Fizik STPM 960 Bersama Mahasiswa UPM, 2019 9. **Pemeriksa** STPM Semester 2019 Physics 960/2, Majlis Peperiksaan Malaysia, 2019 10. **Judge/Jury** for Poster Competition, IFARP, University Sunway, 2019

	11. **Treasurer** for Materials Technology Challenges (MTC 2019) at Dewan Sri Harmoni , UPM Serdang, 2019 12. **Advisor/Lecturer** for International Physics Tour Outreach 1.0 Program at Nagoya Institute Technology, Canon Medical System Japan, 2018 13. **Judge/Jury** for 2nd Hospital Kuala Lumpur Radiology Research, Kuala Lumpur, 2018 14. **Invited Speaker** for 2nd International Conference of Pharmacy and Health Sciences, Ipoh, Perak. 2018 15. **Committee member** for Nobel Laureate Outreach Camp: Scientists for tomorrow (2018) 16. **Invited Speaker** for 7th East Coast Neuroradiology & Interventional Radiology (ESCNIR) Symposium 2018, Kuala Terengganu, 2018. 17. **Invited Speaker** for presenting CME on IOT in Medical Imaging at Institut Kanser Negara, 2017 18. **Committee Member** for Quality Assurance Audit for Diagnostic Radiology Improvement and Learning (QUAADRIL), Ministry of Health Malaysia, 2017 19. **Judge/Jury** for 1st Hospital Kuala Lumpur Radiology Research, Kuala Lumpur 20. **Keynote Speaker** in 8th Symposium on Image Processing, Image Analysis and Real-Time Imaging (IPIARTI) 2017, Asia Pacific University (APU), Kuala Lumpur 21. **Invited speaker** in 'Radiation safety: Do we care enough?' course in Dewan Perdana Hospital Segamat, Ministry of Health Malaysia, 2016 22. **Good Clinical Practice researcher**, Clinical Research Centre, Ministry of Health, Malaysia, 2015 23. **Certified QMS Lead Auditor of ISO 9001** by (RABQSA-AU, RABQSA-QM, RABQSA-TL) and SIRIM, 2013 24. **Invited speaker** in Radiation Protection Course, Hospital Sultan Ismail Johor Bahru, Ministry of Health, Malaysia 2012 25. **Committee Member** in Star Rating Implementation course by MAMPU and Ministry of Health, Malaysia, 2012 26. **Invited speaker** in Dental Radiography Course, Hospital Pontian, Ministry of Health Malaysia, 2011 27. **Invited speaker** in World Radiography Day in Hospital Pakar Sultanah Fatimah, Muar, Ministry of Health Malaysia, 2011 28. **Invited speaker** in Seminar Pengimejan Perubatan Peringkat Negeri Johor, Ministry of Health Malaysia. 2010
Recognition (International)	1. **Invited Speaker** in in CT low dose and Advance Image processing online webinar, organized by Myanmar Radiation Society, sponsored by Fujifilm, 2020. 2. **Invited Speaker** in the International Conference and School on Physics in Medicine and Biosystems 2020, organized by Universitas Indonesia on 6-8 November, 2020. 3. **Project Lecturer** to International Physics Tour Outreach 3.0 (IPTO 2.0) Programme in Sakura Science Programme to NiTech, Nagoya, Japan, 12 -27 January 2020, 2020 4. **Certified Nuclear Security Professional** by World Institute for Nuclear Security (WINS), 2020

	5. **Committee Member** for IAEA Expert Mission: Abdominal Oncologic Imaging, Ministry of Health Malaysia, 2019 6. **IAEA Research fellow** at Universitatsklinikum Magdeburg, LIAM GMbH (sponsored by IAEA) 2019 7. **Invited speaker** for ICAMS-2017, Gaza, Palestine (recorded presentation), 2017 8. **Certified Train of Trainer (TOT)** for Radiological Emergency Preparedness and Response, Regional Security of Radioactive Source Project recognized by Australian Nuclear Science and Technology Organisation (ANSTO) and Malaysia Atomic Energy Licensing Board (AELB), 2011

18. Committee Appointed and Held in University

No.	Name of Project	Year
1.	Timbalan setiausaha dan pensyarah pembimbing Program Nobel Laurete's Outreach Camp-Scientist of Tomorrow 2018	2018
2.	Fasilitator Program UPMSTEM Bersama Warga Maahad Hamidiah Kajang	2018
3.	Committee Member for MTC Challenge	2018, 2019, 2020
4.	Project advisor for Program Pemantapan Skor A STPM 960	2019
5.	International Fundamental Science Congress (IFSC)	2021

19. Membership Positions in Professional, Community or Outside the Official Duties of the University

No.	Institution / Society / Association	Role	Tarikh lantikan / *Start Date*	Tarikh tamat / *Date Ended*
1.	Malaysia Assoc Solid State (MASS)	Member	2018	Current
2.	Institut Fizik Malaysia (IFM)	Member	2017	Current
3.	American Association of Physicists in Medicine (AAPM)	International affiliate member	2017	Current
4.	International Society of Radiation Physics (ISRP)	Member	2015	Current
5.	Institute of Electrical and Electronics Engineers (IEEE)	Member	2015	Current
6.	Malaysia Association of Medical Physicist (MAMP)	Member	2019	Current

7.	Persatuan Fizik Perubatan Kementerian Kesihatan Malaysia (PERFEKS)	Member	2010	Current

20. Activities enhance the personality of university students

No.	Name of Community Network	Description	Year Started
1.	Latihan Industri Dalam Negara (based ICRIS)	Latihan industri	2021
2.	INTERNATIONAL PHYSICS TOUR (IPTO 3.0) - Nagoya Institute of Technology (NITech)	Mobiliti pelajar ke luar negara	2020
3.	Program UPMSTEM Bersama Warga Maahad Hamidiah Kajang	Promosi STEM di Maahad Kajang	2018
4.	Project advisor for Program Pemantapan Skor A STPM 960	3 days Program for STPM students of SMK bandar Puchong 1, Kolej tingkatan 6 Sri Istana, Sekolah Menengah Kebangsaan Tinggi Klang, and SMK Telok Panglima Garang	2019
5.	Program International Physics Tour Outreach 1.0	Program outbound to Tokyo, Japan including visit to several industries such as Canon, Advanced Institute Of Industrial Technology and Tokyo University Of Agriculture And Technology.	2018
6.	The Kuala Lumpur Engineering Science Fair 2017	Committee for booth exhibition	2017
7.	Program Nobel Laurete's Outreach Camp-Scientist of Tomorrow 2018	3 days programme for MARA MRSM students at UPM	2018
8.	Karnival Putra@Serdang 2020	1 day programme at SMK Desa Serdang	2020
9.	International Fundamental Science Congress (IFSC)	International Fundamental Science Congress (IFSC)	2021
10.	Materials Technology Challenges 2020	MTC anjuran persatuan Solid state	2020