Mohd Ifwat Mohd Ghazali, Ph.D.

Contact Information

Faculty of Science and Technology
Universiti Sains Islam Malaysia
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Personal Statement

Highly motivated academician and researcher who has in-depth knowledge in the field of electromagnetics, RF devices, sensors, biomedical devices, material science, Terahertz technology, and Additive Manufacturing (3D Printing) technology. Has demonstrated capability in designing a plethora of multifunctional devices for various applications such as wireless communication, transportation, military, medical and electronics industry. Technically proficient in both research as well as presenting research work in various international conferences. Receives numerous awards both in local (USA) and international conferences for the research presented.

Research Interest

3D Printing (Additive manufacturing), Material Science, Biomedical Devices, Terahertz and Millimeter-wave Electronics and RF Sensors.

Education

Michigan State University, East Lansing,MI

Ph.D., Electrical and Computer Engineering, February 2019

- Dissertation Topic: *Additive manufacturing for Electronic Systems (AMES)*
- Advisor: Premjeet Chahal, Ph.D

M.S., Electrical and Computer Engineering, December 2014

- Thesis Topic: *3D Printed Antennas: Metalized Plastic*
- Advisor: Premjeet Chahal, Ph.D

University Malaya, Kuala Lumpur, Malaysia

Bachelor of Science (B.Sc), Physics May 2011

- Final Year Project Topic: *AC ionic conductivity and DC polarization method of lithium ion transport in PMMA-$LiBF^4$ gel polymer electrolytes*
- Advisor: Zurina Osman, Ph.D

Journal Paper Publications

1. Ahmad Syukran Baharuddin, **Mohd Ifwat Mohd Ghazali**, Mohammad Amir Wan Harun, Wan Abdul Fattah Wan Ismail, Lukman Abdul Mutalib, Sharifudin Md Shaarani, Muhammad Syafiq Alauddin, Mohamed Asyraf Razali, Three-Dimensional (3D) Printed Halal Meat: Do We Need A New Regulatory Framework?, INSLA E-Proceedings, Volume 3, Issue 1, Pages 438-449. 2020

2. Madihah Mohd Saudi, Aiman Hakim Maarof, Azuan Ahmad, Ahmad Shakir Mohd Saudi, Mohd Hanafi Ali, Anvar Narzullaev, **Mohd Ifwat Mohd Ghazali**, Image Detection Model for Construction Worker Safety Conditions using Faster R-CNN, International Journal Of Advanced Computer Science And Applications, 2020.

3. Siti Nur Dianah Abdul Rahman, Nor Hazmin Sabri, Hajar Jaafar, Roslan Umar, **M. I. M. Ghazali**, and Ahmad Nazri Dagang, Public Health Sustainability: Performance Analysis of Circular Patch Antenna for Non-Ionizing Radiation (NIR) Level Measurement , Journal of Sustainability Science and Management, vol. 15, Issue 3, page 10-19, 2020.

4. **M. I. M. Ghazali**, S. Karuppuswami, S. Mondal A. Kaur, and P. Chahal, 3D Printed high functional density packaging compatible out-of-plane antennas, Additive Manufacturing, 2019.

5. **M. I. M. Ghazali**, S. Karuppuswami, S. Mondal A. Kaur, and P. Chahal, Embedded Actives Using Additive Manufacturing For High Density RF Circuits and Systems, IEEE Transactions on Components, Packaging and Manufacturing Technology, 2019.

6. **M. I. M. Ghazali**, Saranraj Karuppuswami, and P. Chahal, 3D Printed Embedded Passive Harmonic Sensor Tag As Markers For Buried Assets Localization, IEEE Sensors Letters, 2019.

7. S. Karuppuswami, S. Mondal, **M. I. M. Ghazali**, and P. Chahal, A multi-use fully 3D printed cavity sensor for liquid profiling, IEEE Sensors Letters, 2018.

8. **M. I. M. Ghazali**, S. Karuppuswami, A. Kaur, and P. Chahal, 3-D printed air substrates for the design and fabrication of RF components, IEEE Transactions on Components, Packaging and Manufacturing Technology, vol. 7, no. 6, pp. 982989, 2017.

9. J. A. Byford, **M. I. M. Ghazali**, S. Karuppuswami, B. L. Wright, and P. Chahal, Demonstration of RF and microwave passive circuits through 3-D printing and selective metalization, IEEE Transactions on Components, Packaging and Manufacturing Technology, vol. 7, no. 3, pp. 463471, 2017.

Newspaper Publications

1. **M.I.M. Ghazali**, MSB Alauddin, "3D Printing the 'New Normal' of Manufacturing.", Bernama (Thoughs), 12 June 2020.
2. **M.I.M. Ghazali**, MSB Alauddin, "3D Printing : Future of Manufacturing", The Star (Sunday Star), 9 June 2020.

Magazine Publications

1. **M.I.M. Ghazali**, K.Y. Park, and P. Chahal, "RF/microwave high-frequency high-reliability - 3D Printed Metallized Plastic Waveguides for Microwave Components," Advancing Microelectronics Magazine, vol. 45, no. 2, pp. 1-40, 2018.

Conference Paper Publications

1. S. Karuppuswami, **M. I. M. Ghazali** S. Mondal, D. Kumar, A. Kaur and P. Chahal, A 3D Printed UHF Passive RFID tag for Plastic Components, in 2019 IIEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, pp. 597-598, IEEE, 2019.
2. **M. I. M. Ghazali**, S. Karuppuswami, S. Mondal and P. Chahal, A 3D Printed Compact PIFA for 5G Applications, in 2019 IIEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, pp. 1995-1996, IEEE, 2019.
3. **M. I. M. Ghazali**, S. Mondal, S. Karuppuswami, and P. Chahal, 3D Printed Substrates for the Design of Compact RF Systems, in 2019 IEEE 69th Electronic Components and Technology Conference (ECTC), pp. 113-118, IEEE, 2019.
4. S. Mondal, **M. I. M. Ghazali**, K. Wijewardena, D. Kumar and P. Chahal, 3D Printed Interposer Layer for High Density Packaging of IoT Devices, in 2019 IEEE 69th Electronic Components and Technology Conference (ECTC), pp. 1687-1692, IEEE, 2019.
5. S. Karuppuswami,A Rajendra-Nicolucci S. Mondal, **M. I. M. Ghazali**, and P. Chahal, Design and Fabrication of 3D Printed Reconfigurable Metamaterial-inspired Structures, in International Symposium on Microelectronics 2019, pp. 595-598, International Microelectronics Assembly and Packaging Society, 2019.
6. S. Karuppuswami, S. Mondal, **M. I. M. Ghazali**, and P. Chahal, A reusable 3D printed cavity resonator for liquid sample characterization, in International Symposium on Microelectronics, vol. 2018, pp. 389-392, International Microelectronics Assembly and Packaging Society, 2018.

7. **M. I. M. Ghazali** and P. Chahal, Ultra-wideband high gain Vivaldi antennas using additive manufacturing, in International Symposium on Microelectronics, vol. 2018, pp. 000754-000759, International Microelectronics Assembly and Packaging Society, 2018.

8. S. Karuppuswami, **M. I. M. Ghazali**, S. Mondal, and P. Chahal, Wireless EAS sensor tags for volatile profiling in food packages, in 2018 IEEE 68th Electronic Components and Technology Conference (ECTC), pp. 2174-2179, IEEE, 2018.

9. **M. I. M. Ghazali**, S. Karuppuswami, S. Mondal, and P. Chahal, Embedded active elements in 3D printed structures for the design of RF circuits, in 2018 IEEE 68th Electronic Components and Technology Conference (ECTC), pp. 1062-1067, IEEE, 2018.

10. K. Y. Park, **M. I. M. Ghazali**, N. Wiwatcharagoses, and P. Chahal, Thick 3D printed RF components: Transmission lines and bandpass filters, in 2018 IEEE 68th Electronic Components and Technology Conference (ECTC), pp. 21862191, IEEE, 2018.

11. S. Mondal, D. Kumar, **M. I. Ghazali**, P. Chahal, L. Udpa, and Y. Deng, Monitoring and localization of buried plastic natural gas pipes using passive RF tags, in AIP Conference Proceedings, vol. 1949, p. 020020, AIP Publishing, 2018.

12. **M. I. M. Ghazali**, K. Y. Park, V. Gjokaj, A. Kaur, and P. Chahal, 3D printed metalized plastic waveguides for microwave components, in International Symposium on Microelectronics, vol. 2017, pp. 0000 78—000082, International Microelectronics Assembly and Packaging Society, 2017.

13. M. Craton, **M. I. M. Ghazali**, B. Wright, K. Y. Park, P. Chahal, and J. Papapolymerou, 3D printed integrated microfluidic cooling for high power RF applications, in International Symposium on Microelec -tronics, vol. 2017, pp. 000675000680, International Microelectronics Assembly and Packaging Society, 2017.

14. **M. I. M. Ghazali**, J. A. Byford, S. Karuppuswami, A. Kaur, J. Lennon, and P. Chahal, 3D printed out-of-plane antennas for use on high density boards, in Electronic Components and Technology Conference (ECTC), 2017 IEEE 67th, pp. 18351842, IEEE, 2017.

15. S. Mondal, **M. I. M. Ghazali**, S. Karuppuswami, A. Kaur, and P. Chahal, A nonlinear transmission line based harmonic RF tag, in Electronic Components and Technology Conference (ECTC), 2017 IEEE 67th, pp. 22372242, IEEE, 2017.

16. S. Karuppuswami, **M. I. M. Ghazali**, A. Kaur, and P. Chahal, Multi-band harmonic RF tags for barcode applications in a cluttered environment, in 2017 IEEE 67th Electronic Com ponents and Technology Conference (ECTC), pp. 18611867, IEEE, 2017.

17. S. Karuppuswami, A. Kaur, **M. I. M. Ghazali**, and P. Chahal, RFID compatible sensor tags for remote liquid sample interrogation, in Electronic Components and Technology Conference (ECTC), 2016 IEEE 66th, pp. 24012407, IEEE, 2016.

18. **M. I. M. Ghazali**, S. Karuppuswami, and P. Chahal, Embedded passive RF tags towards intrinsically locatable buried plastic materials, in Electronic Components and Technology Conference (ECTC), 2016 IEEE 66th, pp. 25752580, IEEE, 2016.

19. **M. I. M. Ghazali**, K. Y. Park, J. A. Byford, J. Papapolymerou, and P. Chahal, 3D printed metalized-polymer UWB high-gain Vivaldi antennas, in Microwave Symposium (IMS), 2016 IEEE MTT-S International , pp. 14, IEEE, 2016.

20. A. Kaur, J. C. Myers, **M. I. M. Ghazali**, J. Byford, and P. Chahal, Affordable terahertz components using 3D printing, in Electronic Components and Technology Conference (ECTC), 2015 IEEE 65th, pp. 20712076, IEEE, 2015.

21. **M. I. M. Ghazali**, E. Gutierrez, J. C. Myers, A. Kaur, B. Wright, and P. Chahal, Affordable 3D printed microwave antennas, in Electronic Components and Technology Conference (ECTC), 2015 IEEE 65th, pp. 240246, IEEE, 2015.

Invited Speaker

- Medical Innovation to overcome challenges during the COVID-19 pandemic.
  3rd Internation Conference on Medicine and Health Sciences.
  Invited Speaker
  16 December 2020

- Rethinking Manufacturing for the Future (3D Printing/Additive Manufacturing)
  TV Talk Show My Society, RTM.
  11 December 2020

- 3D printing : Manufacturing for the Future
  Postgraduate Seminar Faculty of Science and Technology (KoSiST 2020), USIM
  Online Conference
  9 December 2020

- Penghasilan Pelindung Muka Untuk Barisan Hadapan
  Selamat Pagi Malaysia, RTM 1.
  Live Telecast
  30 Mac 2020

- Additive Manufacturing for Electronic Systems
  Photonics and Radiation RG Seminar Series, UIA
  Presentation Talk
  6 September 2019

Research Collaboration

- National Institute of Occupational Safety and Health (NIOSH), Malaysia
- Andorra Women and Children Hospital, Malaysia.
- Pipeline and Hazardous Materials Safety Administration (PHMSA) U.S Department of Transportation.
- The Axia Institute (Midland Research Institute for Value Chain Creation), Michigan, USA.

Awards

Student Awards — Local

- Top 10 Most Cited Researcher in Faculty of Science and Technology, USIM (July - December 2020).
  Organizer : Faculty of Science and Technology, Universiti Sains Islam Malaysia (USIM), Malaysia
- Raising Star Award for Faculty of Science and Technology (July - December 2020).
  Organizer : Faculty of Science and Technology, Universiti Sains Islam Malaysia (USIM), Malaysia
- Raising Star Award for Faculty of Science and Technology (January - Jun 2020).
  Organizer : Faculty of Science and Technology, Universiti Sains Islam Malaysia (USIM), Malaysia
- Raising Star Award for Faculty of Science and Technology (July - December 2020).
  Organizer : Faculty of Science and Technology, Universiti Sains Islam Malaysia (USIM), Malaysia

- 2nd place (Free Space Award) for Electromagnetic Research Group (EMRG) Best Student Paper Award 2018
  Presentation Title : 3D Printed Waveguide for the Design of Microwave and Passive Circuits.
  Organizer : Electromagnetic Research Group (EMRG), Michigan State University, USA.
  Event : EMRG Best Student Paper Award
  Date : October, 8-11, 2018.
  Location : Electrical and Computer Engineering, Michigan State University, USA.

- 2nd place (Free Space Award) for Electromagnetic Research Group (EMRG) Best Student Paper Award 2017
  Presentation Title : 3-D printed air substrates for the design and fabrication of RF components.
  Organizer : Electromagnetic Research Group (EMRG), Michigan State University, USA.
  Event : EMRG Best Student Paper Award
  Date : October, 8-11, 2011.
  Location : Electrical and Computer Engineering, Michigan State University, USA.

- Graduate Conference Travel Grant (2015,2016,2017,2018,2019)
  Organizer : Michigan State University, USA.

- Fellowship Islamic University of Malaysia. 2012
  Organizer : Ministry of Education of Malaysia, Malaysia.
  Fellowship for Master and Ph.D.

- Best presenter for Physics Colloquium University of Malaya (Oral presentation). 2011
  Presentation Title : AC ionic conductivity and DC polarization method of lithium ion transport in PMMA-$LiBF^4$ gel polymer electrolytes.
  Organizer : Department of Physics, University Malaya.
  Event : Colloquium Final Year Project, Department of Physics, University Malaya.
  Date : October, 8-11, 2011.
  Location : University Malaya, Malaysia

Student Awards — International

- Excellent Paper Award
  Organizer : IEEE

Title : Demonstration of RF and microwave passive circuits through 3-D printing and selective metalization. Date : 13 February 2021

- Gold Medal Award
  Organizer : Ministry of Education of Malaysia, Malaysia.
  Project : V.i.T.A.B (Visual Impairment Tactile Audio Book) Solat.
  Event : International Conference and Exposition on Inventions by Institutions of Higher Learning (PECIPTA '19) Date : 22-23 September 2019. Location : Universiti Tun Hussein Onn Malaysia, Batu Pahat, Johor, Malaysia.

- Best of Session Award at International Symposium on Microelectronics (IMAPS). 2018
  Organizer : International Microelectronic Assembly and Packaging Society (IMAPS).
  Presentation Title : A Reusable 3D Printed Cavity Resonator for Liquid Sample Characterization
  Event : 51st International Symposium on Microelectronics.
  Date : October, 8-11, 2018.
  Location : Pasadena, California, United State of America.

- Best of Session Award at International Symposium on Microelectronics (IMAPS). 2017
  Organizer : International Microelectronic Assembly and Packaging Society (IMAPS).
  Presentation Title : 3D Printed Waveguide for the Design of Microwave and Passive Circuits.
  Event : 50th International Symposium on Microelectronics.
  Date : October, 10-12, 2017.
  Location : Raleigh, North Carolina, United State of America.

- Front cover for Advancing Microelectronics Magazine and Invited Featured article.

Presentations Oral

- 51th International Symposium on Microelectronic, Pasadena, California, United States.
  October 2018

- 68th Electronic Components and Technology Conference, Sheraton San Diego Hotel & Marina San Diego, California United States.
  May 2018

- 50th International Symposium on Microelectronic, Raleigh, North Carolina, United States.
  October 2017

- 2016 IEEE MTT-S International Microwave Symposium, San Francisco, California, United States.
  May 2016

- 65th Electronic Components and Technology Conference, Sheraton San Diego Hotel & Marina, San Diego, California, United States.
  May 2015

Poster

- 67th Electronic Components and Technology Conference, Walt Disney World Swan & Dolphin Resort, Lake Buena Vista, Florida, United States.
  May 2017

- 65th Electronic Components and Technology Conference, The Cosmopolitan of Las Vegas, Las Vegas, United States.
  May 2016

Accomplishment

- Google Scholar

- Citation : 361

- h-index : 9

- i10-index : 9

Grant Awards

- Title : Study of mechanical properties of Polyhydroxyalkanoates (PHA) blend from food waste via Additive Manufacturing for Medical Applications
  Role : Main Researcher
  Awarded by : Ministery of High Education Malaysia (Fundamental Research Grant Scheme)
  Date : 1-12-2020 to 30-11-2022

- Title : The Development and Feasibility Study of 3D Printed Material Use in nasopharyngeal Swab for COVID-19 Testing
  Role : Co-Researcher
  Awarded by : USIM Covid-19 Grant
  Date : 1-05-2020 to 1-11-2020

- Title : 3D Printed Emergency Device (Ventilator)
  Role : Main Researcher
  Awarded by : USIM Covid-19 Grant
  Date : 17-04-2020 to 17-10-2020

- Title : Internet of Things Mechanism For Smart Temperature Screening
  Role : Co-Researcher
  Awarded by : USIM Covid-19 Grant
  Date : 17-04-2020 to 17-07-2020

- Title : Intelligent Malaysia Occupational Safety, Security and Environment Drone (IMOSSED-1) As A New Safety Inspection Tool at Construction Site In Malaysia.
  Role : Co-Researcher
  Awarded by : Government Grant
  Date : 1-09-2019 to 1-09-2020

Corporate Social Responsibility

- 3D printing face shields project for frontliners and community during COVID-19.

Position Award

- Advisor for Cooperate Affair for the Faculty of Science and Technology , USIM, Malaysia January 2021 - present

- Head of Researcher for Special Interest Group, Smart Manufacturing and Advanced Renewable Technology Research Group (SMART RG) - Specialize in Additive Manufacturing (3D Printing) , USIM, Malaysia 2020 - present

- Vice Head of Programme for Applied Physics, USIM, Malaysia January 2020- December 2020

- Promotion team for Graduate Studies, USIM, Malaysia 2019-2020
- President of Malaysian Student Organization of Michigan State University, USA. 2013
- President of Physics, University Malaya, Malaysia. 2011

Students

- Irfan bin Yahya
  MSc Student 2020 - present
- Muhammad Afiq Hazizi Bin Mahamood
  MSc Student 2020 - present
- Ahmad Nurhelmy bin Adam
  MSc Student 2020 - present
- Muhammad Zulhilmi Bin Zainuddin
  MSc Student 2020 - present
- Muhammad Faishal Bin Norjeli
  MSc Student 2020 - present
- Ahmad Adnan Bin Abu Bakar
  MSc Student 2020 - present