MUHAMMAD FAHMI ANUAR

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PERSONAL INFO.

CITIZENSHIP	:	MALAYSIA
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Google Scholar	:	https://goo.su/vzn4Z

RESEARCH INTERESTS

Researcher specializing in optical SPR sensor and nanomaterials synthesis (MOFs, glass ceramics, composites & porous), with active participation in conferences and competitions. Passionate about interdisciplinary collaboration, scientific communication, and exploring new ideas to drive innovation.

EDUCATION

(2020-2025)
PhD Sensor Technology –
Universiti Putra Malaysia, Serdang, Selangor.
Research title: Optical properties of zeolitic and carbon based thin films for detection of metal ions using surface plasmon resonance.

(2017-2020)
MSc. Physics (Materials Science) –
Universiti Putra Malaysia, Serdang, Selangor.
Research title: Synthesis, structural, and optical properties of ZnO-SiO_2 composite derived from coconut husks waste.

(2012-2016)
BSc. (Hons.) Materials Science –
Universiti Putra Malaysia, Serdang, Selangor.
Final Year Project: The effect of sintering temperature on structural and optical properties of cobalt-doped zinc oxide

(2011-2012)
Centre for Foundation Studies in Science (PASUM) – Universiti Malaya

EXPERIENCES

(2024-2025)
Enumerator and Research Assistant at Applied Optics Laboratory (AOLAB), Universiti Putra Malaysia.

(2017-2019)
Tutor for Advanced Lab Course,
Department of Physics,
Faculty of Science,
Universiti Putra Malaysia.

(2016)
Internship at Malaysian Nuclear Agency, Bangi, 43000, Kajang, Malaysia.
Project: "Effect of sintering temperature of aluminium-coated mild steel by using slurry method: Corrosion prevention".

RESEARCH PROJECT

Putra Grant: Putra Graduate Initiative (IPS) (April 2018–April 2020)
Project Title: Synthesis, structural and optical studies of Willemite based glass-ceramics derived from waste coconut shell as potential phosphor materials
Project No.: 9642800
Researchers: Yap Wing Fen (Project Leader), Mohd Hafiz Mohd Zaid, Muhammad Fahmi Anuar

ACHIEVEMENTS

1. **Silver Award** for "Sustainable Phosphors Zinc Silicate from Bio-Waste Coconut Husks" at Virtual Materials Technology Challenge 4.0 (v-MTC 2020). Universiti Putra Malaysia.

2. **Silver Award and Best Poster** for "Scientific Approach of Producing High Potential SiO2 Derived from Agricultural Waste Products." at Materials Technology Challenges (MTC 2019). Universiti Putra Malaysia.

3. **Silver Award** for "Metal organic frameworks as sensor: Development of ZIF-8 for trace level detection of metal ions using SPR spectroscopy" at International Materials Technology Challenge, iMTC 2023, Universiti Putra Malaysia.

4. **Silver Award** for "Waste to Wealth: ZnO-SiO2 Composite Derived from Waste Coconut Husk Ash (CHA)." at Perlis International Engineering Invention & Innovation Exhibition (Pi-Envex 2020). Universiti Malaysia Perlis (UNIMAP).

5. **Excellence Postgraduate Award** 2020, Faculty of Science, UPM

RESEARCH SKILLS

- **Synthesis and Fabrication** — Nanomaterials, porous materials, thin films, composites.
- **Characterization Analysis** — FESEM, TEM, XRD, XRF, BET, TGA/DSC, AFM, FTIR, UV-Vis, PL.
- **Data Analysis & Productivity** — MS Word, Excel, PowerPoint.
- **Software:** — HighScore Plus, OriginPro, ImageJ, WinSpall.
- **Scientific Illustration:** — Expert in Adobe Illustrator and Photoshop for creating high-resolution vector schematics, experimental setup, and graphical abstract.
- **Academic writing & publication.**

SCIENTIFIC/RESEARCH ACTIVITIES

1. Oral presenter at International Fundamental Science Congress (iFSC 2023), Kasertsart University, Bangkok, Thailand.
2. Presenter at Virtual Materials Technology Challenges 4.0 (v-MTC 2020).
3. Poster presenter at Materials Technology Challenges (MTC 2019 & 2023).
4. Participant of "Intensive Workshop On Q1 Journal Publishing (2023).
5. Poster presenter at International Fundamental Science Congress (iFSC 2018).
6. Oral presenter at Projek Penyelidikan Inovasi Nanoteknologi (PIN'18), Bukit Jalil.
7. Oral presenter at International Symposium on Advanced Materials and Nanotechnology. (i-SAMN 2018).
8. Participant of X-Ray Diffraction workshop (2018).
9. Participant of workshop on Advanced X-Ray and Transmission Electron Microscopy (TEM) Techniques for Materials Microstructure and Defect Analysis.
10. Participant in Webinar Series "COVID-19: How Physics can help to fight against the pandemic".
11. Participant in Malvern Panalytical XRD Theory & Data Analysis E-Learning.

CO-CURRICULAR ACTIVITIES

1. Executive Committee of Publicity and Technical for Postgraduate Club ION2. (2023 & 2024).
2. Facilitator of "Nanomaterials Application and Modification in Biosensor Design" (2024).
3. Participant in "Bridging boundaries: research insights between Universiti Putra Malaysia and Kasetsart University, Thailand" (2024).
4. Facilitator and Committee of Kem Nanosains 2023, ION2, UPM.
5. Committee (Publicity) International Symposium of Advanced Materials and Nanotechnology (iSAMN), 2022.
6. Volunteer for Putra Super Fizik 2020, UPM.
7. Executive of Certificate for Materials Technology Challenge (MTC 2019).
8. Facilitator of 7th Asean +3 Junior Science Odessey (APT JSO-7), UPM. (2018).
9. Executive of Publicity for Applied Optics Laboratory (AOLAB), UPM.
10. Executive of Media and Publicity for Malam Anugerah Seri Perdana.
11. Executive of Media and Publicity for Kempen Biah Solehah 4.0.
12. Executive of Media and Publicity for Run for Life 3.0.
13. Executive of Media and Publicity for Educational Camp of Biodiversity, Tasik Banding, Perak.
14. Executive of Media and Publicity for Secretariat of Pembangunan Sahsiah (SPS) Kolej Kedua UPM 2014/2015.
15. Executive of Publicity for Bengkel Transformasi Kerjaya & Walk in Interview, Vocation Intervention (2014).
16. Executive of Technical for Integration, Development, and Achievement (iDeA).
17. Executive of Technical for Program Luar Bandar 1 Malaysia Wawasan Siswa Desa Usaha Tani.
18. Executive of Technical for Intercollege Theater Festival (FESTIK) UPM.
19. Editorial Board of Majalah Jentayu Kolej Kedua UPM.
20. Facilitator of Physiclicious Day, UPM.

PUBLICATIONS

First Author

1. Anuar, M.F., Fen, Y.W., Fauzi, N.I.M.F., Hashim, H.S., Abdullah, H., Taufiq, A., Hidayat, N., Mahdi, M.A. Comparative SPR Performance and Optical Constant of Carbon Nanomaterial-Enhanced Gold Thin Films for Sensitive Sb3+ Detection. Optical and Quantum Electronics, 58: 340, 2026. **Q1**
2. Anuar, M.F., Fen, Y.W., Chyi, J.L.Y., Tee, T.S., Abdullah, H. Taufiq, A., Hidayat, N., Tee, T.S., Mahdi, M.A Microporous ZIF-8 Nanocoating as a Sensitive Interface for SPR Detection of Antimony (III). Journal of Materials Science, 61: 11013–11024, 2026. **Q2**
3. Anuar, M.F., Fen, Y.W., Chyi, J.L.Y., Tee, T.S., Daniyal, W.M.E.M.M, Mahdi, M.A. Performance analysis of gold/graphene oxide surface plasmon resonance interface for trace level detection of cadmium ions. Engineering Research Express, 7: 045005, 2025. **Q2**
4. Anuar, M.F., Fen, Y.W., Azizan, M.Z., Zaid, M.H.M, Khaidir, R.E.M, Omar, N.A.S. Sustainable production of arecanut husk ash as potential silica replacement for synthesis of silicate-based glass-ceramics materials. Materials, 14: 1141, 2021. **Q3**
5. Anuar, M.F., Fen, Y.W., Matori, K.A., Mohd, M.H. The physical and optical studies of crystalline silica derived from green synthesis of coconut husk ash. Applied Sciences. 10: 2128, 2020. **Q2**
6. Anuar, M.F., Fen, Y.W., Zaid, M.H.M., Matori, K.A., Khaidir, R.E.M. Synthesis and structural properties of coconut husk as potential silica source. Results in Physics. 11: 1–4, 2018. **Q1**
7. Anuar, M.F., Fen, Y.W., Zaid, Omar, N.A.S, Khaidir, R.E.M.. Sintering temperature effect on structural and optica properties of heat treated coconut husk ash derived SiO2 mixed with ZnO nanoparticles. Materials. 13: 2555, 2020. **Q3**
8. Anuar, M.F., Fen, Y.W., Zaid, Omar, N.A.S.. Optical Studies of crystalline ZnO-SiO2 developed from pyrolysis of coconut husk. Materials Research Express. 7: 055901, 2020. **Q4**

Co-Author

1. Samuri, M.N., Fen, Y.W., Osman, N.H., Hairi, M.F.M., Anuar, M.F. A portable kit for refractive-index studies: refraction and critical angle in solids and liquids. Physics Education, 61: 015039, 2026.
2. Asri, N.A.N., Fen, Y.W., Fauzi, N.I.M., Kamaruzzaman, N.A., Khaidir, R.E.M., Hashim, H.S., Anuar, M.F., Zailani, M.A.Z.M., Fadzil, A.D.I.M., Basari, N.N.A.M., Kamaruddin, M.A., Abdullah, H. Mango peels-assisted synthesis of carbon quantum dots for potential optical sensing of diazinon. Scientific Reports, 16: 4241, 2026.
3. Kamaruzzaman, N.A., Fen, Y.W., Fauzi, N.I.M., Asri, N.A.N., Hashim, H.S., Anuar, M.F., Khaidir, R.E.M., Zailani, M.A.Z.M, Basari, N.N.A.M, Fadzil, A.D.I.M, Kamaruddin, M.A., Abdullah, H. Harnessing Arachis hypogaea shells waste into carbon quantum dots for potential surface plasmon resonance detection of 2-nitrophenol. Diamond and Related Materials, 162: 113262, 2025.
4. Hashim, H.S., Fen, Y.W., Abdullah, J, Anuar, M.F., Omar, N.A.S., Liew, J.Y.C., Daniyal, W.M.E.M., Abdullah, H., Taufiq, A., Mahdi, M.A. Femtomolar detection of phenol using surface-modified plasmonic refractive index sensor with sodium carboxymethyl cellulose. Surfaces and Interfaces, 73: 107463, 2025.
5. Daniyal, W.M.E.M.M., Fen, Y.W., Kariming, M.Z., Fauzi, N.I.M., Hashim, H.S., Anuar, M.F., Nugroho, F.A.A., Hidayat, N., Abdullah, H., Taufiq, A., Eddin, F.B.K. Enhanced surface plasmon resonance detection of ascorbic acid using carbon quantum dots thin film. Plasmonics, 20: 11319–11330, 2025.
6. Eddin, F.B.K., Fen, Y.W., Fauzi, N.I.M., Daniyal, W.M.E.M.M., Omar, N.A.S., Anuar, M.F., Hashim, H.S., Sadrolhosseini, A.R., Abdullah, H. Direct and sensitive detection of dopamine using carbon quantum dots based refractive index surface plasmon resonance sensor. Nanomaterials, 12: 1799, 2022.
7. Rosddi, N.N.M., Fen, Y.W., Omar, N.A.S., Anas, N.A.A., Hashim, H.S., Ramdzan, N.S.M., Fauzi, N.I.M., Anuar, M.F., Daniyal, W.M.E.M. Glucose detection by gold modified carboxyl-functionalized graphene quantum dots-based surface plasmon resonance. Optik, 239: 166779, 2021.
8. Rahmat, F., Fen, Y.W., Anuar, M.F, NAS Omar, MHM Zaid, KA Matori, Khaidir, R.E.M. Synthesis and Characterization of ZnO-SiO2 Composite Using Oil Palm Empty Fruit Bunch as a Potential Silica Source. Molecules. 26: 1061, 2021.
9. Khaidir, R.E.M., Fen, Y.W., Mohd Zaid, M.H., Matori, K.A., Omar, N.A.S., Anuar, M.F., Abdul Wahab, S.A., Khirel Azman, A.Z. (2020a). Addition of ZnO nanoparticles on waste rice husk as potential host material for red-emitting phosphor. Materials Science in Semiconductor Processing. 106: 104774, 2020.
10. Khaidir, R.E.M., Fen, Y.W., Zaid, M.H.M., Matori, K.A., Omar, N.A.S., Anuar, M.F., Wahab, S.A.A., Azman, A.Z.K. Optical band gap and photoluminescence studies of Eu3+ -doped zinc silicate derived from waste rice husks. Optik. 182: 486–495, 2019.
11. Khaidir, R.E.M., Fen, Y.W., Zaid, M.H.M., Matori, K.A., Omar, N.A.S., Anuar, M.F., Wahab, S.A.A., Azman, A.Z.K. Exploring Eu3+-doped ZnO-SiO2 glass derived by recycling renewable source of waste rice husk for white-LEDs application. Results in Physics. 15, 2019.

REFERENCES

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