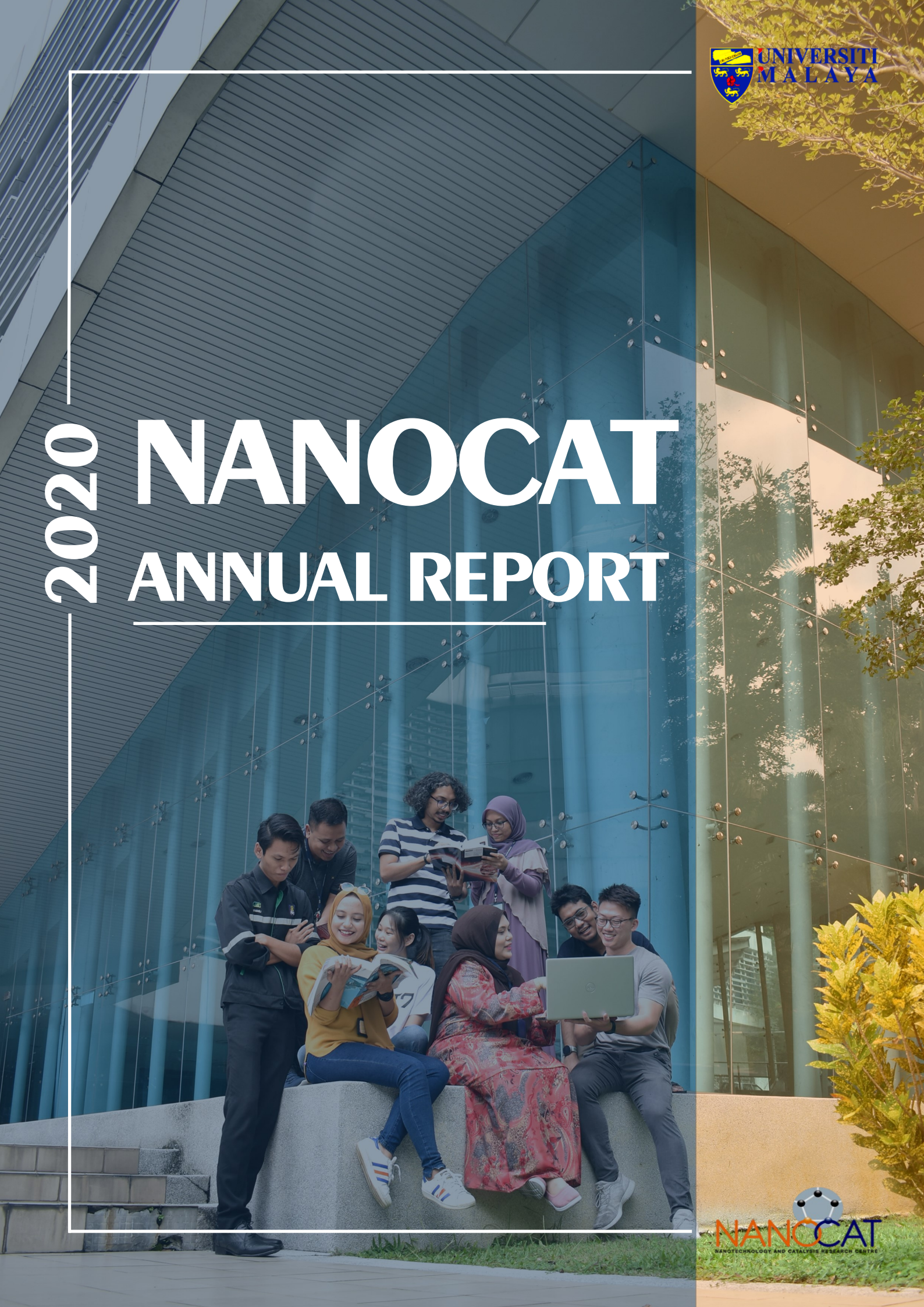
UNIVERSITI MALAYA

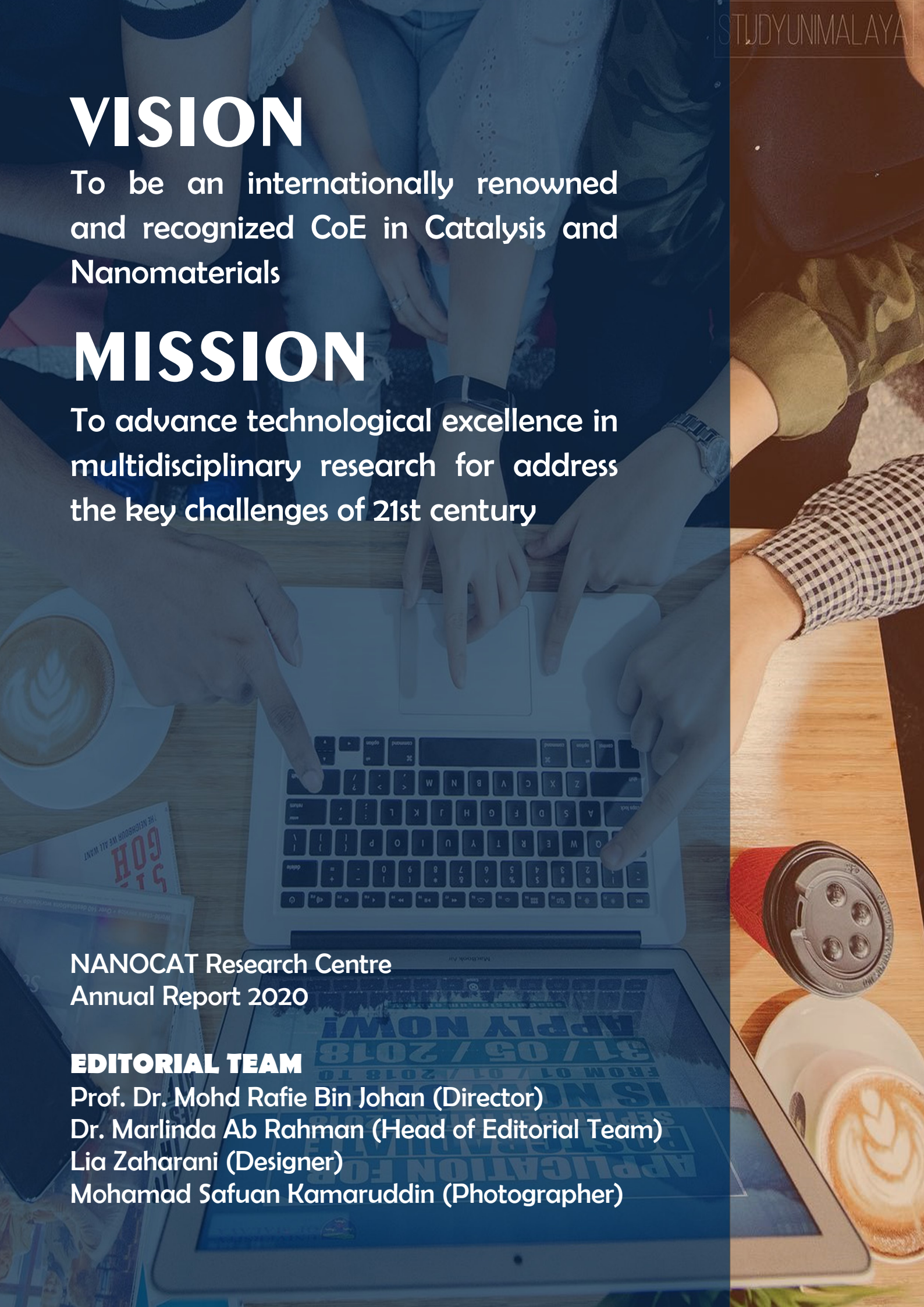
2020

NANOCAT

ANNUAL REPORT



NANOCAT
NANOTECHNOLOGY AND CATALYSIS RESEARCH CENTRE



VISION

To be an internationally renowned and recognized CoE in Catalysis and Nanomaterials

MISSION

To advance technological excellence in multidisciplinary research for address the key challenges of 21st century

NANOCAT Research Centre
Annual Report 2020

EDITORIAL TEAM
Prof. Dr. Mohd Rafie Bin Johan (Director)
Dr. Marlinda Ab Rahman (Head of Editorial Team)
Lia Zaharani (Designer)
Mohamad Safuan Kamaruddin (Photographer)

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DIRECTOR'S FOREWORD

Nanotechnology and Catalysis Research Center (NANOCAT) has been established since 2001 at Universiti Malaya as a specialized centre of excellence (COE) in nanotechnology and catalysis. Our vision is to be an internationally renowned and recognised CoE in Catalysis and Nanomaterials. NANOCAT offers students, researchers and academics a wonderful place to study and research. It is highly inter disciplinary in that chemists, biologists, physicists and engineers all work together to create amazing new materials with remarkable properties and to develop devices that change the way we live. They are also encouraged to carry out their individual scientific research resulting in publications in the best journals. NANOCAT also has strong collaboration with the industrial partner such as Petronas, Hartalega, Oleon and others. We have access to the latest analytical equipment including filed emission scanning electron microscopes, x-ray diffraction, BET analysis, various spectroscopies, chemical reactors and thermal analysis methods.

Prof. Dr. Mohd Rafie Bin Johan

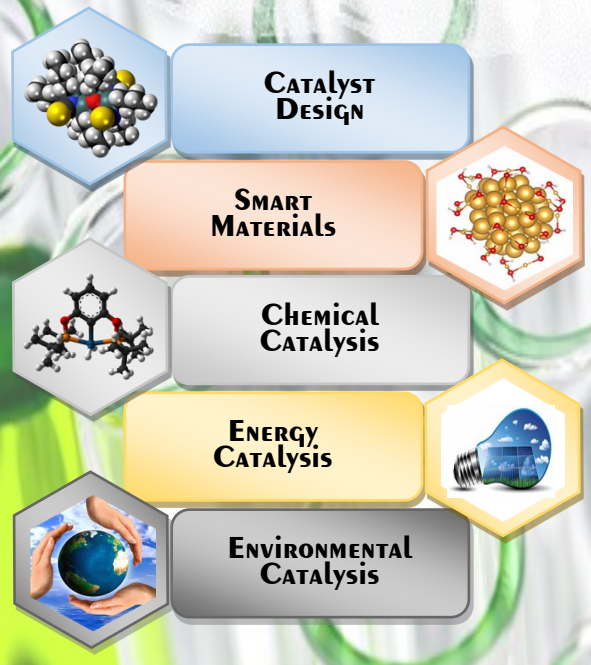
Director of Nanotechnology & Catalysis Research Centre

ABOUT NANOCAT

NANOCAT (Nanotechnology and Catalysis Research centre) is a pTJ incorporated by UM in 2012, a UMCoE. Its mission is to be a world leader in "catalysis and nanotechnology" coining sustainability and green technology. NANOCAT research thrust is deploying catalysis to support energy, chemical synthesis, environment pollution and global warming mitigation as well as designing smart materials as catalyst, sensor, nanocoating, and nanocomposite.

NANOCAT was given a status of HICoE Potential in 2013, in catalysis. The Centre has strived to attain a national status for HICoE (MOHE) as well as NanoCentre (NNC, MOSTI) with strong support and commitment from Universiti Malaya. In the last 4 years, 2016 to 2020, it witnessed a pronounced explosion in its productivity in all aspects.

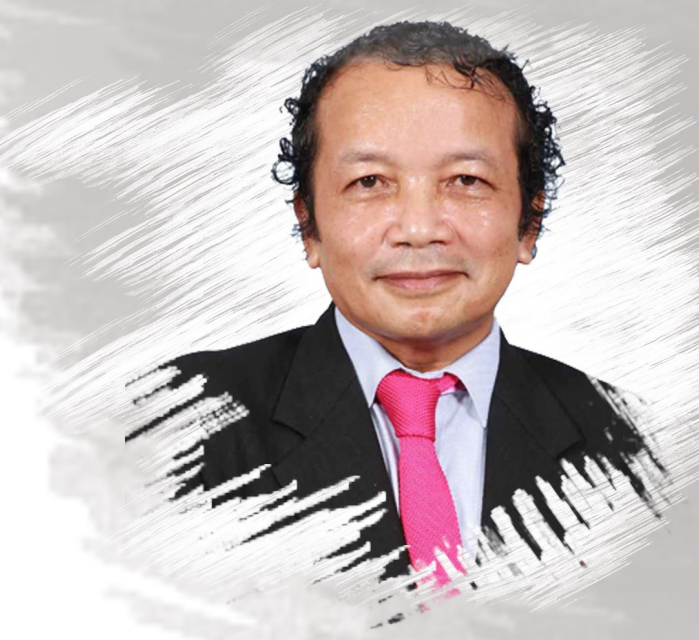
SCOPE OF RESEARCH



RESEARCH PROJECT

As a national research center focusing on nanotechnology and catalysis, NANOCAT has come out with a strategic planning in research grant application. With that in mind, the emphasis has been given to five niche areas of NANOCAT which are catalyst design, energy, chemical synthesis, and environmental mitigation as well as smart materials.

STAFF MANAGEMENT



Prof. Dr. Mohd Rafie Bin Johan

Director of Nanotechnology & Catalysis Research Centre

Mohd Rafie Johan was a Professor of Materials Engineering in Department of Mechanical Engineering, University of Malaya. Currently, he is Director of Nanotechnology and Catalysis Research Center (NANOCAT), University of Malaya. He gained his PhD in 2005 from Department of Physics, University of Malaya. He is the author in 272 peer-reviewed (ISI) papers with H-index 27. Prof. Rafie is well recognized internationally in the field of Nanotechnology. Testimony to this, he has been elected in Evaluation Panels for AET and ITR clusters and UPGP and for grants applications at UMRG, PRGS, FRGS and Qatar Foundation. He has been appointed as a panel for Yang di Pertuan Agong Scholarship and COMSTECS for Islamic Organization Country for evaluation of best scientific papers for Muslim Scientist. He also secured funding as PI from the University of Malaya and Malaysian Government. For the past two years, Prof Rafie has been appointed the editor-in-chief of The International Conference of Science and Engineering Materials (ICOSEM). Prof Rafie has been invited as a speaker to numerous talks and conferences and also Guest Editor for Symmetry (ISI journal) and editor for Asean Engineering Journal. He leads Nanomaterials Engineering Research Group of 15 PhD and 22 Master. These supervised students span over a quite broad scientific area going from science (chemistry, physics, material science, biology) to engineering (chemical, material).

Prof. Dr. Wan Jefrey Basirun

Director of Nanotechnology & Catalysis Research Centre

Wan Jefrey Basirun is currently a Professor in Electrochemistry and Physical Chemistry started his career in the department of Chemistry, University Malaya as the department undergraduate tutor in 1991 upon graduation in bachelors in Science with honors majoring in Chemistry, and proceeded with a PhD degree in electrochemistry in 1997 from the University of Southampton in United Kingdom in 1997. Since joining the active research groups in the department of Chemistry in 1997, he has supervised a total of 17 PhD and 7 Master students to completion, in addition have authored and co-authored more than 258 papers in journals indexed ISI web of knowledge, with a H-Index of 36. His appointment as the Deputy Director in Nanocat in July 2018 is aimed to strengthen NanoCat's niche research areas. His research interest is on the use of nanomaterials and nanocomposites in catalytic processes, sensors, biomaterials and energy conversion and storage.

ACADEMIC STAFF

Assoc. Prof. Dr. Ong Boon Hoong

Areas of expertise:
Composite Materials, Colloid Chemistry, Nano-Materials (Magnetic and Semiconductor Nanostructure)

Assoc. Prof. Dr. Juan Joon Ching

Areas of expertise:
Water and Wastewater processes, Nano-Materials, Biomass Energy Technology, Chemistry of Catalysis

Assoc. Prof. Dr. Yarub Al-Douri

Areas of expertise:
Modeling and Simulation, Semiconductors, Optical Studies, Nanoelectronics, Nanomaterials and Renewable Energy, Coating using Nanocomposites, Film Fabrication, Characterization and Application

Ir. Dr. Lai Chin Wei

Areas of expertise:
Composite Materials, Energy Storage, Semiconductor Materials, Nano Materials, Solar Energy Technology, Waste Management, Catalysts

Dr. Nurhidayatullaili Muhd Julkapli

Areas of expertise:
Bio-Polymers (Synthesis; Composites; Functionalization; Characterization), Composite Materials (Metal Oxide Synthesis; Photocatalysis)

Dr. Lee Hwei Voon

Areas of expertise:
Nano-Materials, Biomass Conversion Technology, Oleochemical Technology, Energy & Fuels, Catalysis

Dr. Chee Chin Fei

Areas of expertise:
Organic Chemical Synthesis (Synthesis; Organic Chemistry; Medicinal; Natural Products)

Dr. Zaira Zaman Chowdhury

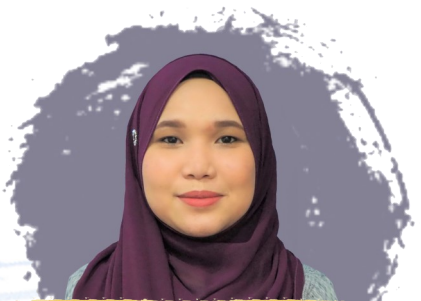
Areas of expertise:
Chemical and Physical Methods, Nano-Materials, Main Group Chemistry

Dr. Nor Aliya Hamizi

Areas of expertise:
Nano-Materials, Biomass Conversion Technology, Oleochemical Technology, Energy & Fuels, Catalysis

Dr. Yasmin Abdul Wahab

Areas of expertise:
IC Testing and Failure Analysis, Device Fabrication and Process Simulation



Dr. Marlinda Ab Rahman

Areas of expertise:
Nanomaterials, Graphene-Based Composites, Electrochemical Materials (Sensors, Biosensors), Polymer Composites (Natural Rubber)

Dr. Nader Ghaffari Khaligh

Areas of expertise:
Synthesis (Green Chemistry), Organic Chemical Sythesis

RESEARCHERS

Dr. Suresh Sagadevan
(Senior Research Fellow)

Areas of expertise:
Material Characterization, Nanomaterials, Nanomaterials Synthesis, Nanoparticle Synthesis

Dr. M. A. Motalib Hossain
(Post-Doctoral Research Fellow)

Areas of expertise:
Biochemistry

Dr. Omid Akbarzadeh Pivehzhani
(Post-Doctoral Research Fellow)

Areas of expertise:
Chemical Engineering

Dr. Seyedehmaryam Moosavi
(Post-Doctoral Research Fellow)

Areas of expertise:
Physics, Materials Science

Dr. Yusliza Yusof
(Post-Doctoral Research Fellow)

Areas of expertise:
Nanomaterials, Carbon Nanotubes, Polymer Composites

Dr. Billie Hiew Yan Zhang
(Post-Doctoral Research Fellow)

Areas of expertise:
Chemical Engineering, Environmental Pollution Control, Nanotechnology and Nanomaterials, Biomass Processing, Process Optimization

ADMINISTRATIVE STAFF

Nur'Adilah Md Jelani
Assistant Registrar (N41)

Afzalina Che Kob @Yaacob
Project Officer (N41)

Wan Mazlina Mansor
Research Assistant

Muhammad Al Amin Che Maghtar
Research Assistant

Nursiyadah Abd Hamid
Assistant Engineer (J29)

Muhamad Aniq Ismail
Research Assistant

TECHNICAL STAFF

Dr. Lee Kian Mun
Research Officer (Q47)

Durga Devi Suppiah
Research Officer (Q44)

Fatimah Zahara Abdullah
Research Officer (Q41)

Noor Fariza Mohd Fawzi
Research Officer (Q41)

Nuramera Pa'dek
Science Officer (C41)

Farhana Abd Wahid
Assistant Science Officer (C29)

Mohamad Safuan Kamaruddin
Assistant Science Officer (C29)

Radziah Saarani
Research Assistant

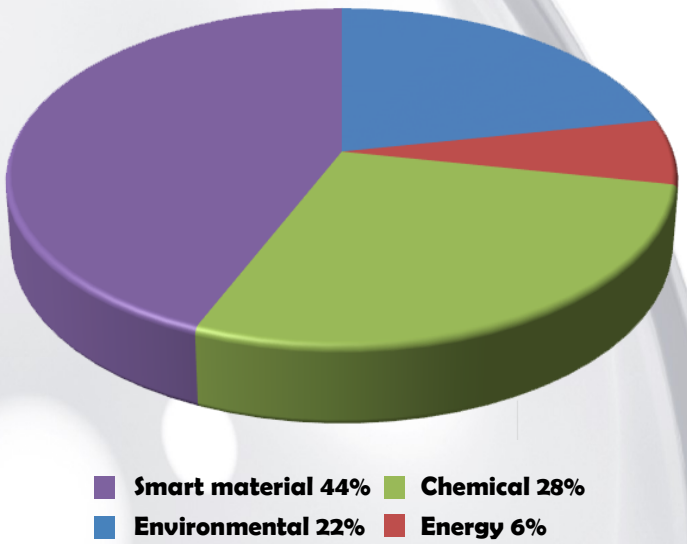
Norlia Abd Rani
Research Assistant

Nur Azrin Daud
Research Assistant

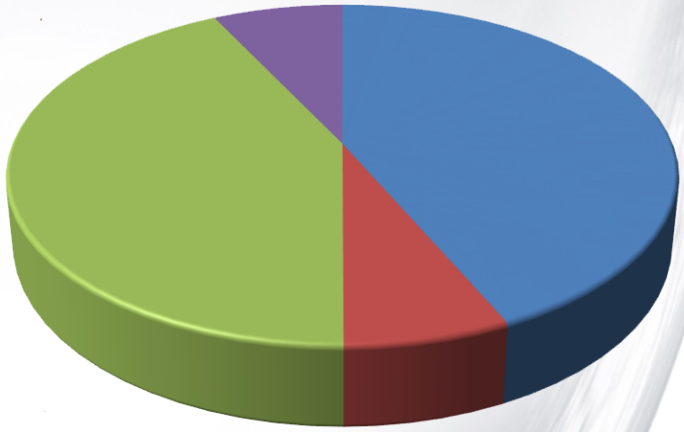
RESEARCH FUNDINGS

As a national research center focused on nanotechnology and catalysis research areas, NANOCAT has come out with a strategic planning in research grant application. With that in mind, the emphasis has been given to four niche areas of NANOCAT which are environmental, smart materials, chemical synthesis and energy that aligned with the Sustainable Development Goals (SDGs). This has been clearly translated to the active research grant 2020 secured by NANOCAT academic staff, which out of RM 4,655,697.36 total amount of research funding received, 44 % was contributed by the smart materials, 28% by chemical synthesis, 22% by environmental studies, and 6% by energy-related studies. The focused of research grant sources selection for NANOCAT Research Center is based on the Industrial grant, UM Research Grant, National Grant, and International Grant with the amount percentage of 43 %, 43 %, 7 % and 7 %, respectively. With this amount of funding received, NANOCAT research thrust could progressively developing and serving catalysis and nanotechnology research not only in Malaysia basis but also over the international region.

Niche Areas 2020



Active Research Grant 2020

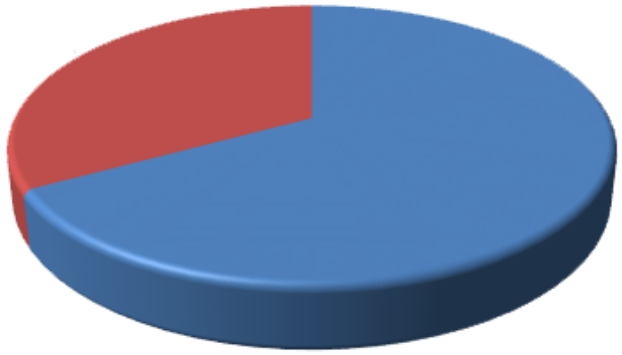


Total Active Research Grant 2020

RM 4,655,697.36

RESEARCH GRANTS

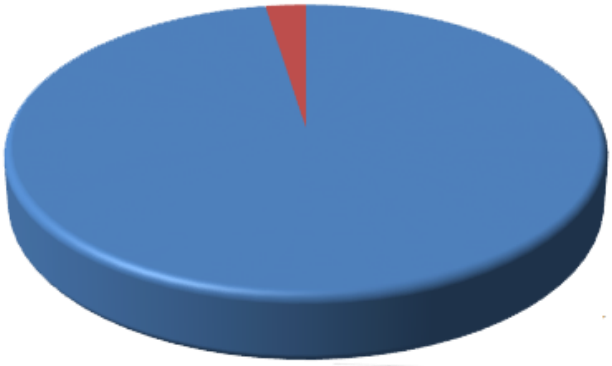
National Grants



FRGS 67%

PRGS 33%

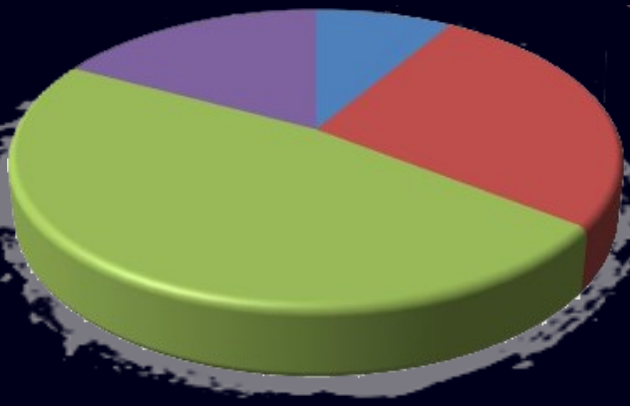
International Grants



Karex Industrie Sdn Bhd 97%

MyBiomass Sdn Bhd 3%

UM Grants



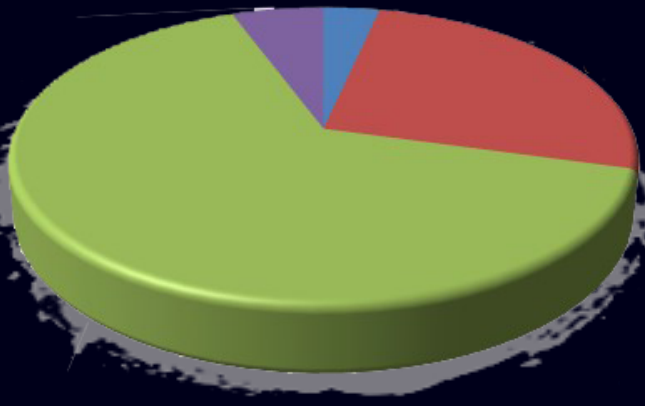
GC 47%

RU (Cluster) 27%

IIRG 17%

UMRG 9%

Industry Grants

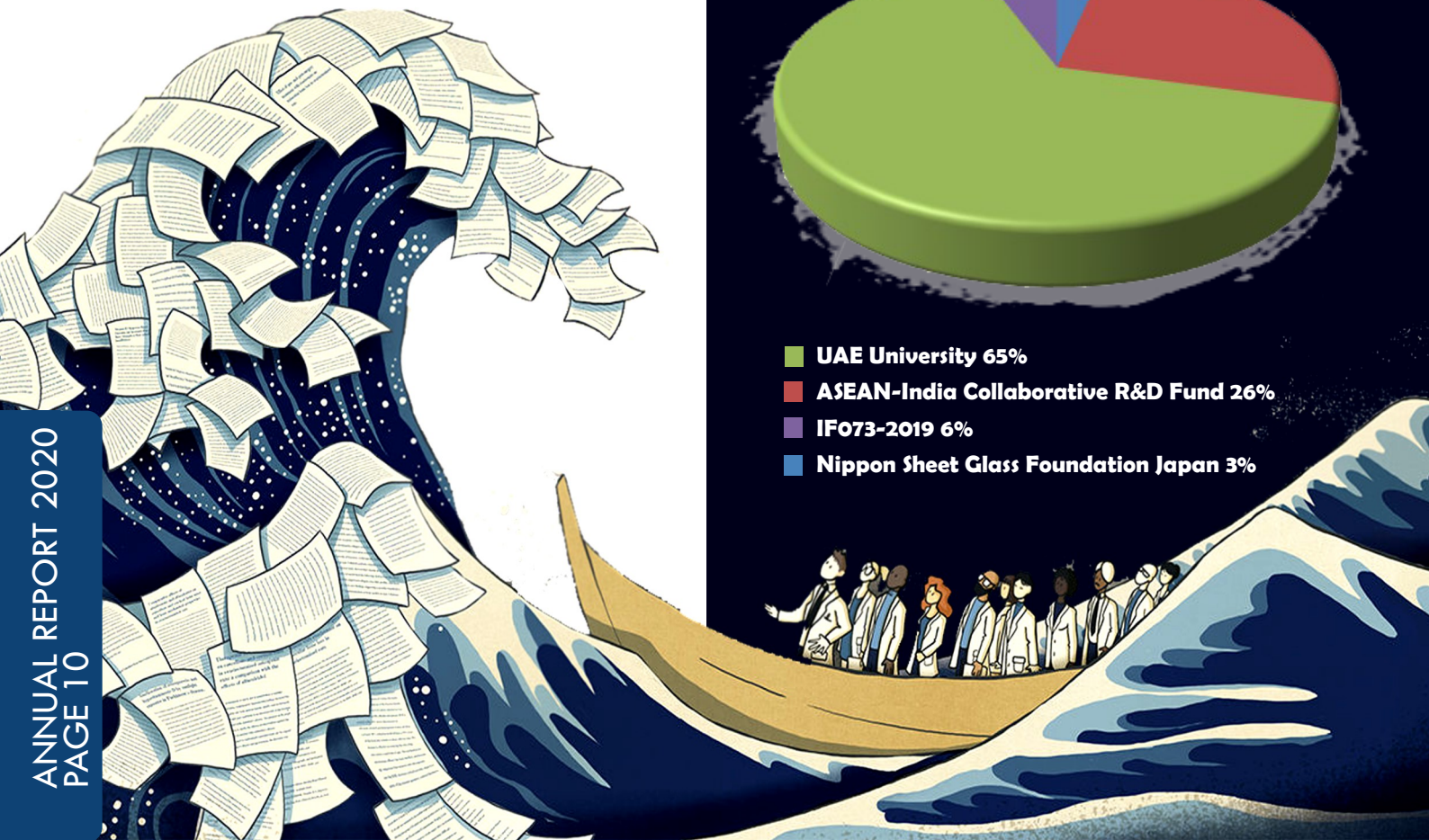


UAE University 65%

ASEAN-India Collaborative R&D Fund 26%

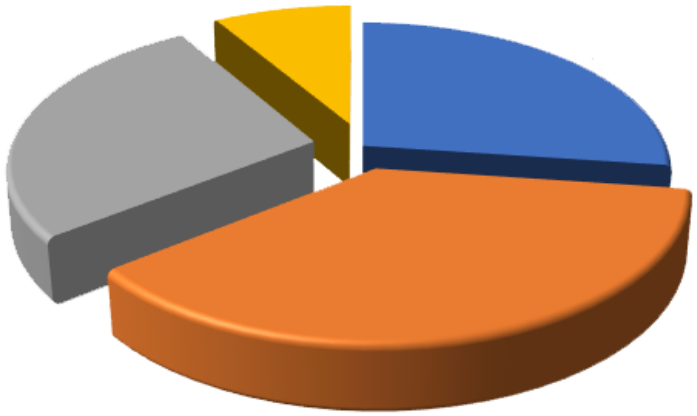
IF073-2019 6%

Nippon Sheet Glass Foundation Japan 3%



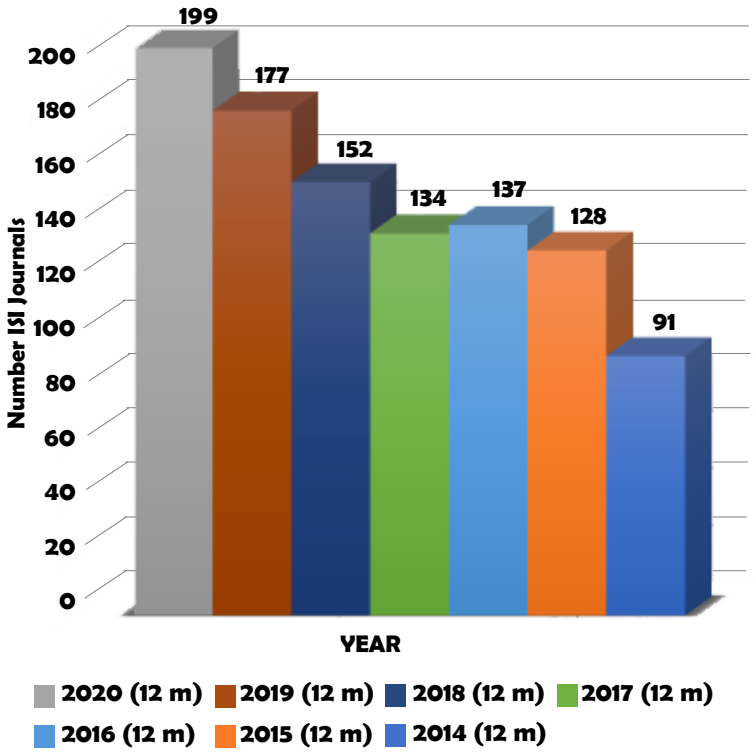
PUBLICATIONS ANALYSIS

JOURNAL IMPACT FACTOR QUARTILE—THOMSON REUTERS (AS OF 31 DEC 2020)



Total ISI Publications : 199
Total Number of Q1 and Q2 : 65%

ISI PAPERS NANOCAT (UM) INDEXDED IN WOS (2014 – 2020)



The number of ISI paper generated from 2020 was increasing +12.5% from 2019

RESEARCH FACILITY

Spectroscopic Hall

The Spectroscopic Hall, a laboratory within NANOCAT, focuses on determination of physical and chemical structural properties, chemical properties, morphological and texture properties, for liquid, semisolid and solid samples.

- Scanning Electron Microscope (SEM)
- Raman Spectroscopy (RAMAN)
- Elemental Analyser (CHNOS)
- Fourier Transform Infra red (Ex situ-FTIR)
- Fourier Transform Infra red (In situFTIR)
- Differential Scanning Calorimetry (DSC)
- Differential Scanning Calorimetry (In situ-DSC)
- Zeta Potential (ZP)
- Particle Size Distribution (PSD)
- Thermogravimetry Analysis (TGA)
- Thermogravimetry Mass Spectroscopy (TG -MS)
- UV-Vis Spectroscopy (UV-VIS)
- Vibration Sample Magnometer (VSM)
- Hall Effect - Ball milling

X-Ray Hall

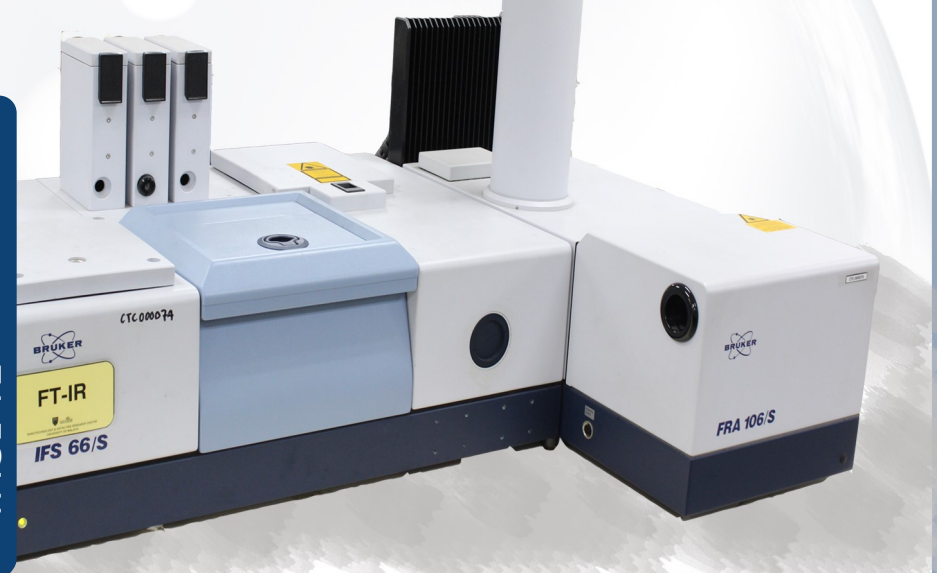
X-Ray Hall provide a non-destructive technique to determine phase composition of solid materials.

- X-Ray Fluorescence (XRF)
- X-Ray Diffraction (Ex situ-XRD)
- X-Ray Diffraction (In situ-XRD)

Reactor Hall

Reactor Hall focuses on catalytic performance screening and testing especially for petrochemical & bio oil industries. Equipped with GC to quantitatively analyze the reaction products to study the reaction mechanism allowing a reaction selectivity and yield to be optimized.

- Karl Fischer Coulometer (KF)
- Freeze Dryer
- Autoclave 200 ml HS/SS
- Density Meter
- Selective Oxidation Fixed-bed Reactor (SELOX)
- Precipitation Reactor (Lab Max)
- Trickle Flow Reactor (TFR)
- High Performance Liquid Chromatography (HPLC)
- Gas Chromatography (TCD-FID)
- Gas Chromatography (GC-MS)
- Temperature Programmed Desorption, Reduction, and Oxidation (TPDRO)
- Surface Area Analyser (BET Single Port)
- Tensiometer (Surface Tension)
- Fixed-bed Microreactor (atmospheric pressure).
- Gel Permeation Chromatography (GPC)
- Ion Chromatography (IC)



LABORATORY

NANOCAT
NANOTECHNOLOGY AND CATALYSIS RESEARCH CENTRE

PUSAT PENYELIDIKAN
NANOTEKNOLOGI DAN PEMANGKINAN

1. SPECTROSCOPY HALL
2. X-RAY HALL
3. REACTOR HALL
4. COMBINATORIAL TECHNOLOGY HALL
5. HARTALEGA LAB
6. BIOSYNTHESIS LABORATORY
7. NANOMATERIAL LABORATORY
8. ADVANCED FUNCTIONAL NANOGROUP LABORATORY
9. OLEON LABORATORY
10. CHEMICAL CATALYST LABORATORY (NANOCAT)
11. SPECIALTY CHEMICALS HALL
12. ENVIRONMENTAL LABORATORY
13. ENERGY AND ADDITIVES LABORATORY
14. CHEMICAL STORE
15. QUANTUM NANOTECHNOLOGY LABORATORY
16. NANO MATERIALS ENGINEERING LABORATORY
17. BIOMEDICAL SCIENCE LABORATORY
18. UM-KAREX LAB
19. ENERGY ANF BATTERY LABORATORY
20. NANO TRANSITION METAL OXIDE PRODUCTION PLAN

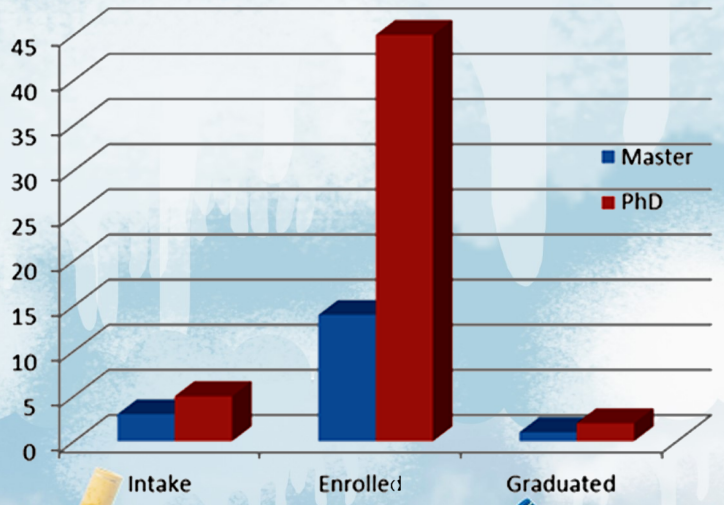
NANOCAT PRODUCT

PRODUCT NAME LIST:

1. Highly Concentrated Graphene Oxide
2. Highly Dispersed Graphene Oxide Solution
3. Gel-like Graphene Oxide
4. Crude Graphene Oxide
5. Highly Stabilized Graphene Oxide
6. Graphene Powder
7. Graphene Oxide Flakes
8. Spongey-like Graphene Oxide
9. Flower-like ZnO/Graphene Nanocomposites
10. Rod-like ZnO/graphene nanocomposites

NANOCAT POSTGRADUATE STUDENTS

NANOCAT is highly active in postgraduate supervision and research. These students, both from local and international, serve as important backbone to support the exponential growth of our center's research activities and outputs. With 14 academic staff, NANOCAT takes pride to attract and supervise 70 postgraduate students (52 PhD and 18 MPhil) where 3 of them successfully graduated in 2020 (2 PhD and 1 MPhil). 94% of them with CGPA > 3.0 are study in NANOCAT under various financial aids and scholarship. As a global choice of research center of excellent, 22.9% of them are international postgraduate students. This is indeed an achievement as part of the effort to promote UM as global top university that



2 PhD Completions

No	Matric No.	Name
1	HHC160003	Lina Adnan Al Ani
2	HHC150006	Md. Ibrahim Khalil

1 MPhil Completions

No	Matric No.	Name
1	HGA150019	Valerie Siong Ling Er

List of Industrial Training Program 2020

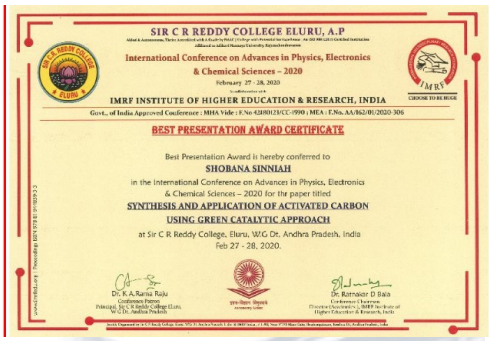
Name of The Institution	No of Students Joined
University of Malaya	1
University Kebangsa Malaysia	1
University Terengganu	1
University Technology Petronas	3
UniMap, Malaysia	1
M'sila, Algérie	2
SBA Algeria	1

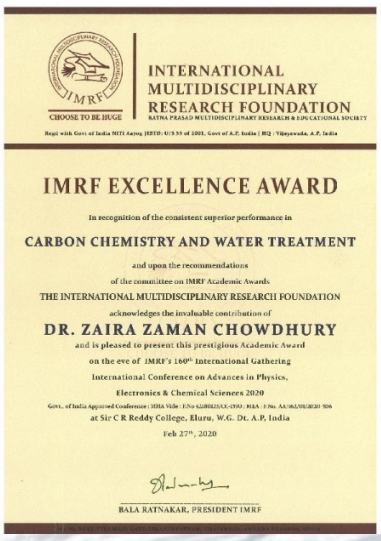
AWARDS & DISTINCTIONS

Stanford University has recently released a list of scientists that represents the world's top 2% scientist in various disciplines, in which 7 NANOCAT researchers were featured in the list and another 2 NANOCAT researchers were listed as world the top 2% world's career-long citation impact scientists. Amongst the world's top 2% scientist are Dr. Suresh Sagadevan, Assoc. Prof. Dr. Juan Joon Ching, Assoc. Prof. Dr. Yarub Kahtan Abdul-Rahman Al-Douri, Ir. Dr. Lai Chin Wei, Prof. Dr. Wan Jefrey Basirun, Dr. Lee Hwei Voon, and Dr. Nader Ghaffari Khaligh. The 2 NANOCAT researchers, Assoc. Prof. Dr. Yarub Kahtan Abdul-Rahman Al-Douri and Dr. Nader Ghaffari Khaligh have listed as 30 UM Researchers among the World's Top 2% Scientist Career-long Citation Impact by Stanford University.

Assoc. Prof. Dr. Juan Joon Ching has been awarded the Top Outstanding Young Malaysian, Junior Chamber International, 2020 in recognition of his outstanding contribution in academic and accomplishment.

October 09, 2020 - Mr. Syed Muhammad Kamal Uddin, a Ph.D. student under the supervision of Prof. Dr. Mohd Rafie Johan, Dr. Zaira Zaman Chowdhury, and Dr. M.A. Motalib Hossain being won the best poster presentation at the International Conference on Applications of Physics, Chemistry & Engineering Sciences Malaysia, 2020.

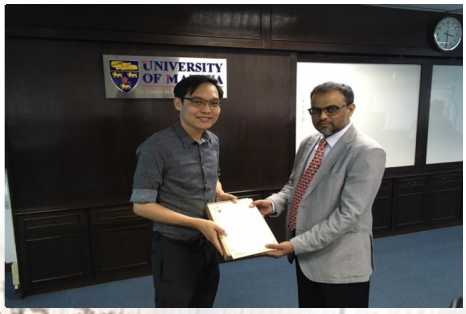




February 27-28, 2020 - Dr. Zaira Zaman Chowdhury et al. and Ms. Shobana Sinniah won the best article award at the International Conference on Advances in Physics, Electronics & Chemical Sciences, 2020. Dr. Zaira also being received the International Multidisciplinary Research Foundation excellence award during the international event.

SEMINAR/WEBINAR

1. Seminar "Membrane Nanocomposite in water desalination in Arabic Gulf Countries - Sultanate of Oman, present application and research future" by Dr. Mohammed AbdulHakim AlSaadi (University of Nizwa, Sultanet of Oman)
2. Seminar "Metal oxides, graphene and graphitic carbon nitride based photocatalysts nanostructures: Synthesis and application" by Professor Mohammad Mansoob Khan (Universiti Brunei Darussalaam, Brunei Darussalaam)
3. Seminar "Functionalization of Titania Photocatalyst on Different Substrates" by Dr. Sheela Chandren (Universiti Teknologi Malaysia)
4. Seminar "Design and synthesis of anti-inflammatory and anti-cancer agents inspired by curcumin" by Associate Professor Dr Lam Kok Wai (UKM)
5. Seminar "Inhaled Therapy: Key to Rapid Treatment of Tuberculosis" by Dr. Thaigarajan Parumasivam (Universiti Sains Malaysia)
6. Webinar "Advanced Materials for Energy and Environmental Applications"
7. Webinar "Advanced Functional Nanomaterials and Their Application
8. Webinar "Supercapacitors and Batteries for Future Avenues"
9. Webinar "Experience of a Chemist in Metrology" by Li Hui Ling (Dept of Chemistry Malaysia)
10. Online Forum "How To Tackle Covid19 Using Nanotechnology In Diagnosis" by Prof. D. Marshall Porterfield (Purdue University, USA) and AP. Dr. Ruslinda Abdul Rahim (UniMAP)
11. Webinar "Updates on Authentication of Halal and Kosher Products using DNA Based Methods" by Dr. M.A. Motalib Hossain
12. Webinar "In vitro Bioactivity performances of carbonated hydroxyapatite with different carbonate to phosphate contents" by Dr. Marjan Safarzadeh (University of Malaya)
13. Webinar on Advanced materials and chemical technologies jointly organised by UM and Mapua University, Philippines



COLLABORATORS

National Research Tomsk State University

UNIVERSITY of the WESTERN CAPE

IFIA

جامعة محمد بوضياف - المسيلة
Université Mohamed Boudiaf - M'sila

ঢাকা বিশ্ববিদ্যালয়

Peace University

جامعة نجرين

GLA UNIVERSITY ESTD. 2010
ऋते ज्ञानान्न मुक्तिः

USM
UNIVERSITI SAINS MALAYSIA

NGL TECH

1974 University of Guilan دانشگاه گیلان ۱۳۵۳

Institute for Color Science and Technology

Intensification in networking and research collaboration were formalized through 15 MOUs (2 national and 13 international), 9 MOAs (5 national and 4 international). The co-operation has given mileage for joint publications in WoS journals with high impact and NDAs (1 national and 2 international).

UTP
UNIVERSITI TEKNOLOGI PETRONAS

Lynas CORPORATION LTD

CHIANG MAI UNIVERSITY

الجامعة الإسلامية العالمية ماليزيا
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

SUNWAY UNIVERSITY

万聚福 WAJUFO

THE UNIVERSITY OF SYDNEY

جامعة نزوى
University of Nizwa

karex berhad

NEXO

UNIVERSITI TEKNOLOGI MARA

THAI KIWA CHEMICALS

COLLABORATORS

MOU

International

- National Research Tomsk State University
- Guilan University
- University of the Western Cape
- Iraqi Forum for Intellectures and Academics
- Peace University
- Wajufo Investment Holdings Co. Ltd
- University of Sydney
- ProNEXO Engineering Consultancy
- Cihan University Sulaimaniya
- GLA University
- Corporation of Research and Industrial Development
- Tikrit University
- Institute for Color Science and Technology

National

- Universiti Teknologi Petronas
- Universiti Teknologi Mara

NDA

International

- Thai Kiwa Chemical Co. Ltd

National

- Karex Industries Sdn Bhd
- Lynas Malaysia

MOA

International

- University of Dhaka
- University of Mohamed Boudiaf M'Sila
- Thai Kiwa Chemical Co. Ltd
- University of Nizwa

National

- NGL Tech Sdn Bhd
- Karex Industries Sdn Bhd
- Sunway University
- International Islamic University Malaysia
- Universiti Sains Malaysia

PUBLICATIONS 2020

No.	Article	Quartile
1	Guechi, N., Bouhemadou, A., Benaisti, I., Bin-Omran, S., Khenata, R., & Al-Douri, Y. (2020). Temperature and doping effects on the transport properties of SrIn2P2 Zintl compound. *Journal of Alloys and Compounds, 815*, 152384.	Q1
2	Sagadevan, S., Marlinda, A. R., Johan, M. R., Umar, A., Fouad, H., Alothman, O. Y.,Khaled, U., Akhtar, M.S., Shahid, M. M. (2020). Reduced graphene/nanostructured cobalt oxide nanocomposite for enhanced electrochemical performance of supercapacitor applications. *Journal of Colloid and Interface Science, 558*, 68-77.	Q1
3	Khalil I., Yehye W.A., Etxeberria A.E., Alhadi A.A., Dezfooli S.M., Julkapli N.B.M., Basirun W.J., Seyfoddin A. (2020). Nanoantioxidants: Recent Trends in Antioxidant Delivery Applications. *Antioxidants, 9*(1).	Q1
4	Hariharan, D., Thangamuniyandi, P., Jegatha Christy, A., Vasantharaja, R., Selvakumar, P., Sagadevan, S.,Pugazhendhi A., Nehru, L. C. (2020). Enhanced photocatalysis and anticancer activity of green hydrothermal synthesized Ag@TiO_2 nanoparticles. *Journal of Photochemistry and Photobiology B: Biology, 202*, 111636.	Q1
5	Padmanabhan V.P., Kulandaivelu R., Nellaiappan S.N.T.S., Lakshmipathy M., Sagadevan S., Johan M.R. (2020). Facile fabrication of phase transformed cerium (IV) doped hydroxyapatite for biomedical applications – A health care approach. *Ceramics International, 46,* 2510-2522.	Q1
6	Mahmoodi, P., Rezayi, M., Rasouli, E., Avan, A., Gholami, M., Ghayour Mobarhan, M., Karimi E., Alias, Y. (2020). Early-stage cervical cancer diagnosis based on an ultra-sensitive electrochemical DNA nanobiosensor for HPV-18 detection in real samples. *Journal of Nanobiotechnology, 18*(1), 11.	Q1
7	Asikin-Mijan, N., Ooi, J. M., AbdulKareem-Alsultan, G., Lee, H. V., Mastuli, M. S., Mansir, N., Alharthi, F.A., Alghamdi, A. A.,Taufiq-Yap, Y. H. (2020). Free-H2 deoxygenation of Jatropha curcas oil into cleaner diesel-grade biofuel over coconut residue-derived activated carbon catalyst. *Journal of Cleaner Production, 249*, 119381.	Q1
8	Gherab, K., Al-Douri, Y., Hashim, U., Ameri, M., Bouhemadou, A., Batoo, K. M., Adil, S. F., Khan, M., Raslan, E. H. (2020). Fabrication and characterizations of Al nanoparticles doped ZnO nanostructures-based integrated electrochemical biosensor. *Journal of Materials Research and Technology, 9*(1), 857-867.	Q1
9	Cheng, Y. W., Chong, C. C., Cheng, C. K., Ng, K. H., Witoon, T., & Juan, J. C. (2020). Ethylene production from ethanol dehydration over mesoporous SBA-15 catalyst derived from palm oil clinker waste. *Journal of Cleaner Production, 249*, 119323.	Q1
10	Chen, Y. & Lee, H. (2020). Recent progress in homogeneous Lewis acid catalysts for the transformation of hemicellulose and cellulose into valuable chemicals, fuels, and nanocellulose. *Reviews in Chemical Engineering*, *36*(2), 215-235.	Q1
11	Sivaranjan, K., Padmaraj, O., Santhanalakshmi, J., Sathuvan, M., Sathiyaseelan, A., & Sagadevan, S. (2020). Effect of Hybrid mono/bimetallic Nanocomposites for an enhancement of Catalytic and Antimicrobial Activities. *Scientific Reports, 10*(1), 2586.	Q1
12	Sookhakian, M., Ullah, H., Mat Teridi, M. A., Tong, G. B., Basirun, W. J., & Alias, Y. (2020). Boron-doped graphene-supported manganese oxide nanotubes as an efficient non-metal catalyst for the oxygen reduction reaction. *Sustainable Energy & Fuels, 4*(2), 737-749.	Q1
13	Khalil, I., Yehye, W. A., Muhd Julkapli, N., Sina, A. A. I., Rahmati, S., Basirun, W. J., & Seyfoddin, A. (2020). Dual platform based sandwich assay surface-enhanced Raman scattering DNA biosensor for the sensitive detection of food adulteration. *Analyst, 145*(4), 1414-1426.	Q1
14	Amir, M. N. I., Halilu, A., Julkapli, N. M., & Ma'amor, A. (2020). Gold-graphene oxide nanohybrids: A review on their chemical catalysis. *Journal of Industrial and Engineering Chemistry, 83*, 1-13.	Q1
15	Choo, M.-Y., Oi, L. E., Ling, T. C., Ng, E.-P., Lin, Y.-C., Centi, G., & Juan, J. C. (2020). Deoxygenation of triolein to green diesel in the H2-free condition: Effect of transition metal oxide supported on zeolite Y. *Journal of Analytical and Applied Pyrolysis, 147*, 104797.	Q1
16	Mohd Adnan, M. A., Phoon, B. L., & Muhd Julkapli, N. (2020). Mitigation of pollutants by chitosan/metallic oxide photocatalyst: A review. *Journal of Cleaner Production, 261*, 121190.	Q1
17	Samsudin, N. A., Low, F. W., Yusoff, Y., Shakeri, M., Tan, X. Y., Lai, C. W., Asim N., Oon C. S., Newaz K. S., Tiong S. K., Amin, N. (2020). Effect of temperature on synthesis of cellulose nanoparticles via ionic liquid hydrolysis process. *Journal of Molecular Liquids, 308*, 113030.	Q1
18	Che Mat, A. N., Jefrey Basirun, W., Asrina Sairi, N., & Shahid Mehmood, M. (2020). Photoelectrochemical reduction of CO_2 over Ru/Mn/Co trimetallic catalysts supported anatase TiO_2 under visible light irradiation. *Journal of Sol-Gel Science and Technology, 94*(2), 279-287.	Q1

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19	Mousavi, S. M., Zarei, M., Hashemi, S. A., Ramakrishna, S., Chiang, W.-H., Lai, C. W., & Gholami, A. (2020). Gold nanostars-diagnosis, bioimaging and biomedical applications. *Drug Metabolism Reviews, 52* (2), 299-318.	Q1
20	Sultana, S., Hossain, M. A. M., Azlan, A., Johan, M. R., Chowdhury, Z. Z., & Ali, M. E. (2020). TaqMan probe based multiplex quantitative PCR assay for determination of bovine, porcine and fish DNA in gelatin admixture, food products and dietary supplements. *Food Chemistry, 325*, 126756.	Q1
21	Hashim, L. H., Halilu, A., Sudarsanam, P., Umar, Y. B., Johan, M. R. B., & Bhargava, S. K. (2020). Bifunctional rice husk-derived SiO_2-Cu-Al-Mg nanohybrid catalyst for one-pot conversion of biomass-derived furfural to furfuryl acetate. *Fuel, 275*, 117953.	Q1
22	Ahmed, W., Chowdhury, Z. Z., Kazi, S. N., Johan, M. R., Akram, N., & Oon, C. S. (2020). Effect of ZnO-water based nanofluids from sonochemical synthesis method on heat transfer in a circular flow passage. *International Communications in Heat and Mass Transfer, 114*, 104591.	Q1
23	Rani, P., Kashyap, M. K., Singla, R., Thakur, J., & Reshak, A. H. (2020). Magnetism and magnetocrystalline anisotropy of tetragonally distorted L10-FeNi: N alloy. *Journal of Alloys and Compounds, 835*, 155325.	Q1
24	Fam, S. Y., Chee, C. F., Yong, C. Y., Ho, K. L., Mariatulqabtiah, A. R., & Tan, W. S. (2020). Stealth Coating of Nanoparticles in Drug-Delivery Systems. *Nanomaterials, 10*(4).	Q1
25	Alnujaim, S., Bouhemadou, A., Bedjaoui, A., Bin-Omran, S., Al-Douri, Y., Khenata, R., & Maabed, S. (2020). Ab initio prediction of the elastic, electronic and optical properties of a new family of diamond-like semiconductors, Li2HgMS4 (M = Si, Ge and Sn). *Journal of Alloys and Compounds, 843*, 155991	Q1
26	Tan, S. C., Chong, C. W., Yap, I. K. S., Thong, K. L., & Teh, C. S. J. (2020). Comparative assessment of faecal microbial composition and metabonome of swine, farmers and human control. *Scientific Reports, 10* (1), 8997.	Q1
27	Al Amin, M., Mahfujur Rahman, M., Razimi, M. S. A., Chowdhury, Z. Z., Hussain, M. N. M., & Desa, M. N. M. (2020). Screening of commercial meat products from supermarket chains for feline derivatives using SP-PCR-RLFP and lab-on-a-chip. *Journal of Food Composition and Analysis, 92*, 103565.	Q1
28	Thomas, P., Duolikun, T., Rumjit, N. P., Moosavi, S., Lai, C. W., Bin Johan, M. R., & Fen, L. B. (2020). Comprehensive review on nanocellulose: Recent developments, challenges and future prospects. *Journal of the Mechanical Behavior of Biomedical Materials, 110*, 103884.	Q1
29	Mohd Ishak, N. A., Khalil, I., Abdullah, F. Z., & Muhd Julkapli, N. (2020). A correlation on ultrasonication with nanocrystalline cellulose characteristics. *Carbohydrate Polymers, 246*, 116553.	Q1
30	Akinpelu, A. A., Ali, M. E., Owolabi, T. O., Johan, M. R., Saidur, R., Olatunji, S. O., & Chowdbury, Z. (2020). A support vector regression model for the prediction of total polyaromatic hydrocarbons in soil: an artificial intelligent system for mapping environmental pollution. *Neural Computing and Applications, 32* (18), 14899-14908.	Q1
31	Gan, S., Zakaria, S., Salleh, K. M., Anuar, N. I. S., Moosavi, S., & Chen, R. S. (2020). An improved physico-mechanical performance of macropores membrane made from synthesized cellulose carbamate. *International Journal of Biological Macromolecules, 158*, 552-561.	Q1
32	Phoon, B. L., Ong, C. C., Mohamed Saheed, M. S., Show, P.-L., Chang, J.-S., Ling, T. C.,Lam, S. S., Juan, J. C. (2020). Conventional and emerging technologies for removal of antibiotics from wastewater. *Journal of Hazardous Materials, 400*, 122961.	Q1
33	Al-Douri, Y., Gherab, K., Batoo, K. M., & Raslan, E. H. (2020). Detecting the DNA of dengue serotype 2 using aluminium nanoparticle doped zinc oxide nanostructure: Synthesis, analysis and characterization. *Journal of Materials Research and Technology, 9*(3), 5515-5523.	Q1
34	Mousavi, S. M., Low, F. W., Hashemi, S. A., Lai, C. W., Ghasemi, Y., Soroshnia, S., Savardashtaki, A., Babapoor, A., Rumjit, N. P., Goh, S. M., Amin, N., Tiong, S. K. (2020). Development of graphene based nanocomposites towards medical and biological applications. *Artificial Cells, Nanomedicine, and Biotechnology, 48*(1), 1189-1205.	Q1
35	Safarzadeh, M., Chee, C. F., Ramesh, S., & Fauzi, M. N. A. (2020). Effect of sintering temperature on the morphology, crystallinity and mechanical properties of carbonated hydroxyapatite (CHA). *Ceramics International, 46*(17), 26784-26789.	Q1
36	Akinpelu, A. A., Ali, M. E., Owolabi, T. O., Johan, M. R., Saidur, R., Olatunji, S. O., & Chowdbury, Z. (2020). A support vector regression model for the prediction of total polyaromatic hydrocarbons in soil: an artificial intelligent system for mapping environmental pollution. *Neural Computing and Applications, 32*(18), 14899-14908.	Q1

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37	Marlinda, A. R., Sagadevan, S., Yusoff, N., Pandikumar, A., Huang, N. M., Akbarzadeh, O., & Johan, M. R. (2020). Gold nanorods-coated reduced graphene oxide as a modified electrode for the electrochemical sensory detection of NADH. *Journal of Alloys and Compounds, 847*, 156552.	Q1
38	Hashwan, S. S. B., Khir, M. H. B. M., Al-Douri, Y., & Ahmed, A. Y. (2020). Recent Progress in the Development of Biosensors for Chemicals and Pesticides Detection. *IEEE Access, 8*, 82514-82527.	Q1
39	Hashemi, S. A., Mousavi, S. M., Faghihi, R., Arjmand, M., Rahsepar, M., Bahrani, S., Ramakrishna, S., Lai, C. W. (2020). Superior X-ray Radiation Shielding Effectiveness of Biocompatible Polyaniline Reinforced with Hybrid Graphene Oxide-Iron Tungsten Nitride Flakes. *Polymers, 12*(6).	Q1
40	Cheng, S. Y., Show, P.-L., Juan, J. C., Ling, T. C., Lau, B. F., Lai, S. H., & Ng, E. P. (2020). Sustainable landfill leachate treatment: Optimize use of guar gum as natural coagulant and floc characterization. *Environmental Research, 188*, 109737.	Q1
41	Rasul, R. M., Tamilarasi Muniandy, M., Zakaria, Z., Shah, K., Chee, C. F., Dabbagh, A., Rahman N.A., Wong, T. W. (2020). A review on chitosan and its development as pulmonary particulate anti-infective and anti-cancer drug carriers. *Carbohydrate Polymers, 250*, 116800.	Q1
42	Low, L. E., Ooi, C. W., Chan, E. S., Ong, B. H., & Tey, B. T. (2020). Dual (magnetic and pH) stimuli-reversible Pickering emulsions based on poly(2-(dimethylamino)ethyl methacrylate)-bonded Fe_3O_4 nanocomposites for oil recovery application. *Journal of Environmental Chemical Engineering, 8* (2), 103715.	Q1
43	Lim, L. P., Juan, J. C., Huang, N. M., Goh, L. K., Leng, F. P., & Loh, Y. Y. (2020). Effect of graphene oxide particle size on the tensile strength and stability of natural rubber graphene composite. *Materials Science and Engineering: B, 262*, 114762.	Q1
44	Omar, F. S., Numan, A., Bashir, S., Vikneswaran, R., Ramesh, K., & Ramesh, S. (2020). Effect of physical interaction between polyaniline and metal phosphate nanocomposite as positive electrode for supercapattery. *Journal of Energy Storage, 32*, 101850.	Q1
45	Ismail, N. A., Mohd Zulkifli, N. W., Chowdhury, Z. Z., & Johan, M. R. (2020). Grafting of straight alkyl chain improved the hydrophobicity and tribological performance of graphene oxide in oil as lubricant. *Journal of Molecular Liquids, 319*, 114276.	Q1
46	Niek, W. K., Teh, C. S. J., Idris, N., Sit, P. S., Lee, Y. Q., Thong, K. L., & Sri La Sri Ponnampalavanar, S. (2020). Methicillin-resistant Staphylococcus aureus bacteraemia, 2003–2015: Comparative evaluation of changing trends in molecular epidemiology and clinical outcomes of infections. *Infection, Genetics and Evolution, 85*, 104567.	Q1
47	Balu, S., Chen, Y.-L., Juang, R. C., Yang, T. C. K., & Juan, J. C. (2020). Morphology-Controlled Synthesis of α–Fe_2O_3 Nanocrystals Impregnated on g-C_3N_4–SO_3H with Ultrafast Charge Separation for Photoreduction of Cr (VI) Under Visible Light. *Environmental Pollution, 267*, 115491.	Q1
48	Asikin-Mijan, N., Rosman, N. A., AbdulKareem-Alsultan, G., Mastuli, M. S., Lee, H. V., Nabihah-Fauzi, N., Lokman I. M., Alharthi F. A., Alghamdi A. A., Aisyahi A. A., Taufiq-Yap, Y. H. (2020). Production of renewable diesel from Jatropha curcas oil via pyrolytic-deoxygenation over various multi-wall carbon nanotube-based catalysts. *Process Safety and Environmental Protection, 142*, 336-349.	Q1
49	Sakti, S. C. W., Laily, R. N., Aliyah, S., Indrasari, N., Fahmi, M. Z., Lee, H. V., Akemoto Y., Tanaka, S. (2020). Re-collectable and recyclable epichlorohydrin-crosslinked humic acid with spinel cobalt ferrite core for simple magnetic removal of cationic triarylmethane dyes in polluted water. *Journal of Environmental Chemical Engineering, 8*(4), 104004.	Q1
50	Nasir, K. M., Sulong, N. H. R., Johan, M. R., & Afifi, A. M. (2020). Synergistic effect of industrial- and bio-fillers waterborne intumescent hybrid coatings on flame retardancy, physical and mechanical properties. *Progress in Organic Coatings, 149*, 105905.	Q1
51	Mustaffa, S. N. A., Ariffin, N. A., Khalaf, A. L., Yaacob, M. H., Tamchek, N., Paiman, S., & Sagadevan, S. (2020). Sensing mechanism of an optimized room temperature optical hydrogen gas sensor made of zinc oxide thin films. *Journal of Materials Research and Technology, 9*(5), 10624-10634.	Q1
52	Chen, L. -H., Shen, H. -T., Chang, W. -H., Khalil, I., Liao, S. -Y., A. Yehye, W., Liu, S. -C., Chu, C. -C., Hsiao, V. K. S. (2020). Photocatalytic Properties of Graphene/Gold and Graphene Oxide/Gold Nanocomposites Synthesized by Pulsed Laser Induced Photolysis. *Nanomaterials, 10*(10).	Q1
53	Ikram, R., Mohamed Jan, B., Vejpravova, J., Choudhary, M. I., & Zaman Chowdhury, Z. (2020). Recent Advances of Graphene-Derived Nanocomposites in Water-Based Drilling Fluids. *Nanomaterials, 10*(10).	Q1

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No.	Article	Quartile
1	Fahmi, M. Z., Wibowo, D. L. N., Sakti, S. C. W., Lee, H. V., & Isnaeni. (2020). Human serum albumin capsulated hydrophobic carbon nanodots as staining agent on HeLa tumor cell. *Materials Chemistry and Physics, 239*, 122266.	Q2
2	Benali, M. A., Tabet Derraz, H., Ameri, I., Bourguig, A., Neffah, A., Miloua, R., Yahiaoui, I. E., Ameri, M., Al -Douri, Y. (2020). Synthesis and analysis of SnO_2/ZnO nanocomposites: Structural studies and optical investigations with Maxwell–Garnett model. *Materials Chemistry and Physics, 240*, 122254.	Q2
3	Pulingam, T., Thong, K. L., Appaturi, J. N., Nordin, N. I., Dinshaw, I. J., Lai, C. W., & Leo, B. F. (2020). Synergistic antibacterial actions of graphene oxide and antibiotics towards bacteria and the toxicological effects of graphene oxide on human epidermal keratinocytes. *European Journal of Pharmaceutical Sciences, 142*, 105087.	Q2
4	Izadiyan, Z., Shameli, K., Miyake, M., Hara, H., Mohamad, S. E. B., Kalantari, K.,Taib, S. H. M., Rasouli, E. (2020). Cytotoxicity assay of plant-mediated synthesized iron oxide nanoparticles using Juglans regia green husk extract. *Arabian Journal of Chemistry, 13*(1), 2011-2023.	Q2
5	Anasamy, T., Chee, C. F., Kiew, L. V., & Chung, L. Y. (2020). In vivo antitumour properties of tribenzyltin carboxylates in a 4T1 murine metastatic mammary tumour model: Enhanced efficacy by PLGA nanoparticles. *European Journal of Pharmaceutical Sciences, 142*, 105140.	Q2
6	Low, F. W., Samsudin, N. A., Yusoff, Y., Tan, X. Y., Lai, C. W., Amin, N., & Tiong, S. K. (2020). Hydrolytic cleavage of glycosidic bonds for cellulose nanoparticles (CNPs) production by BmimHSO4 ionic liquid catalyst. *Thermochimica Acta, 684*, 178484.	Q2
7	Lakshminarayana, G., El-Naggar, A. M., Myronchuk, G. L., Gondek, E., Reshak, A. H., Czaja, P., & Kityk, I. V. (2020). Laser-stimulated Pockels effect in CdBr2/Cu polymer nanocomposites. *Physica E: Low-dimensional Systems and Nanostructures, 118*, 113904.	Q2
8	Che Mansor, M. S. A., Amir, M. N. I., Muhd Julkapli, N., & Ma'amor, A. (2020). Gold hybrid nanomaterials: Prospective on photocatalytic activities for wastewater treatment application. *Materials Chemistry and Physics, 241*, 122415.	Q2
9	Mathialagan, A., Manavalan, M., Venkatachalam, K., Mohammad, F., Oh, W. C., & Sagadevan, S. (2020). Fabrication and physicochemical characterization of g-C_3N_4/ZnO composite with enhanced photocatalytic activity under visible light. *Optical Materials, 100*, 109643.	Q2
10	Hawa, A., Sudesh, K., Sagadevan, S., Mukheem, A., & Sridewi, N. (2020). Physicochemical characteristics of poly(3-hydroxybutyrate) and poly(3-hydroxybutyrate-co-3-hydroxyhexanoate) electrospun nanofibres for the adsorption of phenol. *Journal of Experimental Nanoscience, 15*(1), 26-53.	Q2
11	Yau, X. H., Low, F. W., Khe, C. S., Lai, C. W., Tiong, S. K., & Amin, N. (2020). An investigation of the stirring duration effect on synthesized graphene oxide for dye-sensitized solar cells. *PLOS ONE, 15*(2), e0228322.	Q2
12	Abdulkareem-Alsultan, G., Asikin-Mijan, N., Mustafa-Alsultan, G., Lee, H. V., Wilson, K., & Taufiq-Yap, Y. H. (2020). Efficient deoxygenation of waste cooking oil over Co_3O_4–La_2O_3-doped activated carbon for the production of diesel-like fuel. *RSC Advances, 10*(9), 4996-5009.	Q2
13	Lett, J. A., Sagadevan, S., Shahnavaz, Z., Latha, M. B., Alagarswamy, K., Hossain, M. A. M., Mohammad, ., Johan, M. R. (2020). Exploration of gum ghatti-modified porous scaffolds for bone tissue engineering applications. *New Journal of Chemistry, 44*(6), 2389-2401.	Q2
14	Muthukumaran, M., Prasath, P. V., Kulandaivelu, R., Sagadevan, S., Mohammad, F., & Oh, W. C. (2020). Fabrication of nitrogen-rich graphitic carbon nitride/Cu_2O (g-C_3N_4@Cu_2O) composite and its enhanced photocatalytic activity for organic pollutants degradation. *Journal of Materials Science: Materials in Electronics, 31*(3), 2257-2268.	Q2
15	Appaturi, J. N., Pulingam, T., Thong, K. L., Muniandy, S., Ahmad, N., & Leo, B. F. (2020). Rapid and sensitive detection of Salmonella with reduced graphene oxide-carbon nanotube based electrochemical aptasensor. *Analytical Biochemistry, 589*, 113489.	Q2
16	Bouchenafa, M., Benmakhlouf, A., Sidoumou, M., Bouhemadou, A., Maabed, S., Halit, M., Bentabet A., Bin-Omran S., Khenata, R., Al-Douri, Y. (2020). Theoretical investigation of the structural, elastic, electronic, and optical properties of the ternary tetragonal tellurides KBTe2 (B = Al, In). *Materials Science in Semiconductor Processing, 114*, 105085.	Q2

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No.	Article	Quartile
17	Mohd Yasin, S. M., Badruddin, I. A., & Johan, M. R. (2020). Super Stability of Ag Nanoparticle in Crystalline Lamellar (Lc) Liquid Crystal Matrix at Different pH Environment. *Symmetry, 12*(1).	Q2
18	Moosavi, S., Gan, S., Chia, C. H., & Zakaria, S. (2020). Evaluation of Crosslinking Effect on Thermo-mechanical, Acoustic Insulation and Water Absorption Performance of Biomass-Derived Cellulose Cryogels. *Journal of Polymers and the Environment, 28*(4), 1180-1189.	Q2
19	Alehashem, M. S., Ariffin, A. B., Savage, P. B., Yehya Dabdawb, W. A., & Thomas, N. F. (2020). Treasures old and new: what we can learn regarding the macrocyclic problem from past and present efforts in natural product total synthesis. *RSC Advances, 10*(19), 10989-11012.	Q2
20	Kamaruddin, N. H., Marlinda, A. R., Said, M., Abd Wahab, F., Tong, G. B., Hamizi, N. A., Chowdhury, Z. Z., Sagadevan, S., Johan, M. R. (2020). Synergistic effects of rubber band infused graphene nanocomposite on morphology, spectral, and dynamic mechanical properties. *Polymer Composites, 41*(4), 1475-1480.	Q2
21	Tan, T. L., Lee, K. M., Lai, C. W., Hong, S. L., & Rashid, S. A. (2020). Photocatalytic degradation mechanisms of dimethyl phthalate esters by MWCNTs-anatase TiO_2 nanocomposites using the UHPLC/Orbitrap/MS technique. *Advanced Powder Technology, 31*(2), 533-547.	Q2
22	Oi, L. E., Choo, M.-Y., Lee, H. V., Taufiq-Yap, Y. H., Cheng, C. K., & Juan, J. C. (2020). Catalytic deoxygenation of triolein to green fuel over mesoporous TiO2 aided by in situ hydrogen production. *International Journal of Hydrogen Energy, 45*(20), 11605-11614.	Q2
23	Marlinda, A. R., Yusoff, N., Sagadevan, S., & Johan, M. R. (2020). Recent developments in reduced graphene oxide nanocomposites for photoelectrochemical water-splitting applications. *International Journal of Hydrogen Energy, 45*(21), 11976-11994.	Q2
24	Gani, A., Cheref, O., Ghezali, M., Rabah, M., Reshak, A. H., Djaballah, Y.,Righi, H., Rached, D., Belasri, A. (2020). Mechanical stability and optoelectronic behavior of BeXP2 (X=Si and Ge) chalcopyrite. *Chinese Journal of Physics, 64*, 174-182.	Q2
25	Khalil, M., Pratama, R. I., Sujak, M., Garry, A., Djuhana, D., Umar, A., Lai C. W., Jan, B. M. (2020). Dependence of the photocatalytic reduction of bicarbonate to formic acid by Au–TiO_2 on Au morphology and its plasmonic vibrational mode. *Materials Chemistry and Physics, 249*, 123018.	Q2
26	Ibrahim, R. K., Fiyadh, S. S., AlSaadi, M. A., Hin, L. S., Mohd, N. S., Ibrahim, S., Afan H. A., Fai C. M., Ahmed A. N., Elshafie, A. (2020). Feedforward Artificial Neural Network-Based Model for Predicting the Removal of Phenolic Compounds from Water by Using Deep Eutectic Solvent-Functionalized CNTs. *Molecules, 25*(7).	Q2
27	Mousavi, S. M., Low, F. W., Hashemi, S. A., Samsudin, N. A., Shakeri, M., Yusoff, Y., Rahsepar M., Lai C. W., Babapoor A., Soroshnia S., Goh S. M., Tiong S. K., Amin, N. (2020). Development of hydrophobic reduced graphene oxide as a new efficient approach for photochemotherapy. *RSC Advances, 10*(22), 12851-12863.	Q2
28	Anuar, N. S., Basirun, W. J., Shalauddin, M., & Akhter, S. (2020). A dopamine electrochemical sensor based on a platinum–silver graphene nanocomposite modified electrode. *RSC Advances, 10*(29), 17336-17344.	Q2
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