

CURRICULUM VITAE: MUHAMAD SHARAN BIN MUSA

1. PERSONAL CONTACT

Name: Muhamad Sharan Musa
Nationality: Malaysian
Current Position: University Lecturer (DS51)
Current Department: School of Materials & Mineral Resources Engineering
Universiti Sains Malaysia (Engineering Campus)
Nibong Tebal, Penang.
Previous Position: Senior Operations Improvement Executive (Synthomer Asia)
Previous Department: Technology (Operations)
Previous Location: Asia Innovation Centre (Kulai)
Synthomer Sdn. Bhd.
Qualifications: B. Eng (USM), Ph.D (Manchester)
Graduate Engineer: G185727A
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2. RESEARCH AREA

Current: SCIENCE, TECHNOLOGY AND ENGINEERING | MATERIAL MANUFACTURING (POLYMER)

No	Title	Year
1	Innovation for coating applications (anti-static, conductive and non-leaching antimicrobial gloves, constructions, decorative, specialty, protective & smart hybrid coatings)	Current
2	Advanced Materials (core-shell technology, self-healing polymer, memory shape polymer)	Since 2016
3	Nanomaterials (Nanostructured & nanoparticle polymers)	Since 2014
4	Thermoplastic elastomer bio-composite	Since 2013
4	Polyelectrolytes for wastewater treatment	Since 2012
5	Reinforced of natural rubber latex composite	Since 2011

3. EDUCATION ACHIEVEMENT

No	Education level	Field	University	Year
1	Doctor of Philosophy	Polymer Science & Engineering	The University of Manchester	2013 - 2017
2	Bachelor of Engineering	Polymer Engineering	Universiti Sains Malaysia	2008 -2012

4. RESEARCH THESIS

No	Title	Year
1	A Study of Nanostructured Particles and Their Influence on Synthetic Rubber Properties for Glove Application (Ph.D.)	2013 - 2017
2	Effect of Various Filler on Anionic-Polyacrylamide system (BEng)	2012 -2013

5. INNOVATION AWARDS

No	Title	Year
1	Synthomer Innovation Excellence Awards 2019 (R&D Functional Solutions Team)	2019
2	1st runner up-Synthomer "Four-I" competition (Idea, Initiation, Improvement, Implementation) Team project and presenter: Internal Control Limit aligned with Plant Capability Improvement	2019
3	Synthomer Award Scholarship for PhD Funding	2013

6. CAREER ACHIEVEMENT

Year	Position	Company
Ogos 2021 – current	University Lecturer (DS51)	Universiti Sains Malaysia (Nibong Tebal)

- Delivering **lectures, seminars and tutorials (EBP201: Polymer Synthesis, EBP308: Rubber: Processing and Products, ebp310: Plastics Processing, EBP302: Mould and Die Design, EBP412: Speciality Engineering Polymer)**
- Design, prepare and develop courses, modules, and **teaching materials** align with Engineering Accreditation Council, Malaysia
- Developing and implementing new methods of teaching to reflect changes in **current research & industry requirements**
- Assess students' **coursework**, set, mark and moderate **examinations and assessments**
- Supervise students' **research activities** & research groups, including final year undergraduate projects, Masters & PhD dissertations
- Support students through an **advisory role** include research assistants (postdocs), PhD, Masters and undergraduate students
- Undertake individual and collaborative research projects that are **published in peer-reviewed journals** and actively contribute to **USM institution's research profile**
- Writing up research and scientific writing for **publication**
- Research, develop and prepare **proposals** to attract external funding for a range of research projects
- Carry out **administrative tasks** related to the department, such as student admissions, induction programmes and involvement in committees and boards
- Contributing to **professional conferences and seminars** in the polymer field of expertise
- Establish **collaborative links** with other institutions, industrial, commercial and public organisations
- Participating in staff & university **training** activities

Year	Position	Company
April 2018 – April 2021 (3 years 1 month)	Sr. Operations Improvement Executive (Synthomer Asia)	Synthomer Sdn. Bhd. (Kulai)

- Expertise in **continuous process improvement** such as **Lean Six Sigma tool**
- Specialised and strong technical understanding of **polymerisation and recipe optimisation**
- Ability to **synthesise** the water-based and solvent-based products (emulsion polymerisation)
- Complied internal and external **SHE regulations**; laboratory and plant capabilities
- Successfully commercialised **70%** (2020 KPI target) of **new R&D products**
- Successfully commercialised **85%** (2020 KPI target) of **inter-plant product transfers**
- Involved the **in-plant troubleshooting** with Process Improvement Team and improved the **90% of product quality** of current products
- Operations lead (case manager) with **100% on the track** for all the product profile change (PPC) cases of Synthomer plants

- Resolved the 2020 target of **80% problematic grades** mainly product quality issues
- Managed and updated the **active recipes** of Synthomer Asia plants regularly (ownership of coating & NBR recipes)
- Achieved **80% target (2020)**, the trial project for alternative raw material approvals with procurement in conjunction with laboratory trials
- Introduced the **VOC baseline Synthomer products** based on analysed VOC results used statistical analysis, SPSS
- Engaged with R&D, technical service, sales, procurement, plant planner, production and quality control departments

Year	Position	Company
July 2017 – March 2018	Senior Research Chemist (Synthomer Asia)	Synthomer Sdn. Bhd. (Kluang)

- Research Lead, a team of R&D chemists and technicians in providing **product innovation** to Synthomer's business, focusing on **health & protection applications** such as anti-static, conductive and non-leaching antimicrobial gloves and **water-based & solvent-based coating applications** such as decorative and protective paints, constructions, sealants and carpet (SBR).
- Managed **polymerisation and testing laboratory** and prioritised the **process and safety issues**
- Managed and published the **scientific research journal, patents** and technical reports
- Developed technical solutions using existing and new technologies (**technical expertise**)
- Managed the commercial R&D projects to develop new products (**project management**)
- Developed **new methods & procedures** for synthesis, testing and analysis among the R&D team
- Involved in scale-up of new R&D products with the technologist at all plants of Synthomer Asia
- Contributed and shared **ideas** for all R&D projects & topics at **Synthomer Gate Meeting** (business community platform) to discuss the relevant research, update, and progress.
- Discussed and aligned constantly the **research activities** with sales & marketing, procurement, quality control and production
- Established a **good relationship between R&D Asia**; with R&D centres in Marl, Germany and Harlow, UK.
- Collaborated with UTM & **co-supervisor** for UTM M. Sc student (Sponsored by Synthomer)

Year	Position	Company
Nov 2013 – June 2017	Researcher for Synthomer Innovation Project (PhD)	Synthomer (UK) Ltd & The University of Manchester

- My PhD project had collaborated with Synthomer UK. I received the **Synthomer Award Scholarship** for my PhD Funding. My PhD project is related to the NBR project, entitled "**A Study of Nanostructured Particles and Their Influence on the Synthetic Rubber Properties**". This project is mainly for **glove application**. The highlight of this project is **nanostructured polymers**. In addition, I had successfully discovered new **advanced material technology** such as core-shell structured/morphology, self-healing and memory shape polymer for future and potential application.

7. RESEARCH PUBLICATIONS (subject to confidentiality of Synthomer's policy)

International Journal article

2021

J Turton, S Worrall, **MS Musa**, AH Milani, Y Yao, P Shaw, D Ring and BR Saunders, Effect of methacrylic acid and pendant vinyl groups on the mechanical properties of highly stretchable core-shell nanostructured films deposited from water, *Journal of Polymer Chemistry*, (2021), 12, p.466-477 (Impact Factor: 5.342, Q1)

2017

M Obeng, AH Milani, **MS Musa**, Z Cui, LA Fielding, L Farrand, M Goulding, BR Saunders, Self-assembly of poly (lauryl methacrylate)-b-poly (benzyl methacrylate) nano-objects synthesised by ATRP and their temperature-responsive dispersion properties, *Soft Matter*, (2017), 13, p.2228-2238 (Impact Factor: 3.140, Q1)

2016

MS Musa, AH Milani, P Shaw, G Simpson, PA Lovell, E Eaves, N Hodson, BR Saunders (2016), Tuning the modulus of nanostructured ionomer films of core-shell nanoparticles based on poly (n-butyl acrylate), *Soft Matter*. (2016), 12, p.8112-8123 (Impact Factor: 3.140, Q1)

2014

Somjit Tungchaiwattana, **MS Musa**, AH. Milani, P Shaw, Gareth Simpson, PA Lovell, E Eaves, N Hodson, BR Saunders, the role of acrylonitrile in controlling the structure and properties of nanostructured ionomer films, *Soft Matter*, (2014), 10, p.4725-4734 (Impact Factor: 3.140, Q1)

A. Ariffin, **MS Musa**, M.B.H. Othman, M.A.A. Razali, F. Yunus, Effects of various fillers on anionic polyacrylamide systems for treating kaolin suspensions, *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, (2014), 441, p.306-311 (Impact Factor: 3.990, Q1)

8. INTERNATIONAL CONFERENCE

Muhamad. S. Musa (2017), Ionically Crosslinked Nanostructured Films of Core-Shell Nanoparticles containing n-Butyl Acrylate", INTERNATIONAL CONFERENCE 25th PolyChar, Kuala Lumpur, Malaysia.

Muhamad. S. Musa (2015), Poly (Butylacrylate-Acrylonitrile-Methacrylic Acid) Nanoparticle Ionomer Films, School of Materials, PGR Student Conference, Manchester, United Kingdom.

9. WEBINAR

Manufacturing: Polymers, Processing and Applications, 26th March 2021, organised by Manufacturing and Materials Engineering Student Association (MMESA) 20/21, International Islamic University Malaysia (IIUM)

10. KEYNOTE SPEAKER FOR SYNTHOMER U.K, GERMANY & MALAYSIA

- 1) Self-healing and Shape Memory Properties of Nanostructured films, 11th May 2017, Synthomer (UK) Ltd. Harlow, United Kingdom.
- 2) Designing Poly (Butylacrylate-Acrylonitrile-Methacrylic Acid) Nanoparticle Ionomer Films with High Modulus and Ductility, 16th March 2017, Synthomer Sdn. Bhd., Kluang, Malaysia.
- 3) New Strategy to Improve the Stiffness and Ductility of Poly (Butyl Acrylate) Nanostructured Films, 17th Nov 2016, Synthomer (UK) Ltd. Harlow, United Kingdom.
- 4) Tuning the Modulus of Nanostructured Ionomer Films of Core-Shell Nanoparticles based on Poly (n-Butyl Acrylate), 20th-22th May 2015, Synthomer Deutschland GmbH, Marl, Germany.
- 5) Preparation and Properties of the Nanostructured Ionomer Films of Core-Shell Nanoparticles, 9th Dec 2014, Synthomer (UK) Ltd. Harlow, United Kingdom

- 6) Characterisation and Properties of Commercial Butadiene-Based Particles and Ionomer Films, 15th May 2014, School of Materials, University of Manchester, United Kingdom.

11. CO-SUPERVISOR

External Co-Supervisor for Master of Philosophy (2018), Faculty of Chemical & Engineering, UTM Skudai.

12. INDUSTRY ADVISORY PANEL

- 1) Faculty of Mechanical Engineering and Manufacturing, Universiti Tun Hussein Onn Malaysia (Jan 2021-Dec 2022)
- 2) Faculty of Chemistry Industry, Universiti Malaysia Pahang (Jan 2021-Dec 2022)

13. REVIEWER FOR INTERNATIONAL JOURNAL

Journal of Hazardous Materials

14. TEAMWORK COMMITMENT/ COLLABORATION

- 1) Synthomer Waste Management Team (2020-2021)
- 2) Review Paper (2020), "Recent Progress in Carbon-Based Hydrogels & Aerogels and Their Applications: An Overview" collaborated with lecturer from Universiti Kebangsaan Malaysia & International Islamic University of Malaysia.
- 3) Synthomer Sdn Bhd and Universiti Teknologi Malaysia (UTM) collaboration project (Satellite Laboratory) 2017-2019
- 4) Fundamentals of Sensor Technology: Principles and Novel Designs/Book Chapter 28

15. COMMITTEE MEMBER (EVENT/ WORKSHOP)

- 1) Committee Member for Synthomer Safety, Health and Environment (SHE) Week 2020, 7th - 11th Dec 2020
- 2) Committee Member for Synthomer Emulsion Polymerisation Training 2019, 2020 and 2021.

16. LATEST TRAINING (2020 – 2021)

List of training that have been attended under **Synthomer Asia Innovation Centre** are as follows:

- 1) Fundamental of Optical Tensiometry Technique & Lauda Scientific Meter™ Software Operation Training; Contact Angle, Surface Tension (Lauda LSA100) and Surface Free Energy (24th – 25th March 2021)
- 2) Acid titrator METTLER TOLEDO (1st Feb 2021)
- 3) UV-VIS model Shimadzu UV-1900i (29th Jan 2021)
- 4) Introduction to Emulsion Polymerisation (5th Jan 2021)
- 5) Biocide Dip slide Challenge Test - Review on Results and Reproducibility (16th Dec 2020)
- 6) Fourier-transform infrared spectroscopy, FTIR Nicolet iS20 (2nd Dec 2020)
- 7) Redox Potential by Oxidation Reduction Potential (ORP) meter (25th Nov 2020)
- 8) Minimum film formation temperature (MFFT) Instrument, Model MFFT 90 (10th Nov 2020)
- 9) Polymer Training by Prof. Brian Saunders from Manchester University (17-20th Aug 2020)
- 10) Integrated ISO / MANEX Internal Audit - Dispersion / Alkyd (12th June 2020)
- 11) Particle Characterization Series 02/2020 - Advanced Topics on DLS and ELS (28th Apr 2020)
- 12) Emulsion polymerisation workshop and lab simulation (9-11th March 2020)
- 13) Surface & Interfacial Tension Analyser (2nd March 2020)
- 14) Turbiscan and data interpretation (11th Feb 2020)
- 15) ZetaSizer Nano Malvern (16th Jan 2020)
- 16) Synthomer Process Safety Training (6th Jan 2020)

List of training that had been attended under the **University of Manchester & Synthomer (UK) Ltd.:**

- 1) DMA Q800 Dynamic Mechanical Analyzer (DMA), Differential Scanning Calorimeter (DSC 250), Thermogravimetric Analyzer (TGA 550), MCR302 Rheometer, tensile machine, Acid titrator, XRD, TEM, Scanning Electron Microscope (SU3500-SEM) - Hitachi, Raman spectroscopy, Microscope Optic, Zetasizer Nano ZS90
- 2) Teaching assistant for undergraduate student on ABAQUS class (Sept 2015 – Feb 2016)
- 3) Polymerisation of Polybutadiene by high pressure reactor at Synthomer Harlow, UK.
- 4) Lean Six Sigma Yellow Belt and Minitab 16 (statistical analysis)

17. SOFTWARE SKILLS

List of software skills that have been trained and experienced are as follows:

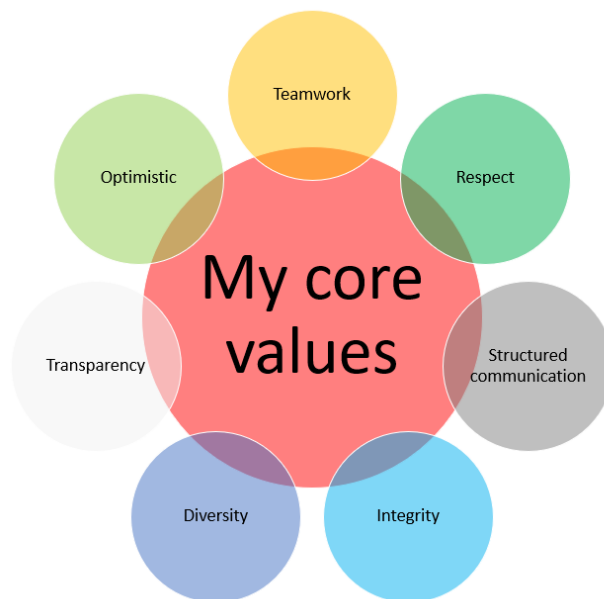
Synthomer Sdn Bhd

- 1) Microsoft office: Word, Power Point, Excel
- 2) Outlook and Microsoft Teams
- 3) IBM Lotus Notes
- 4) Laboratory Information Management System (LIMS)
- 5) Process information management system (PIMS)
- 6) Product Profile Change (PPC)
- 7) Design of Experiments (DOE)
- 8) Statistical Process Control (SPC)
- 9) Systems Applications and Products in Data Processing (SAP)
- 10) Travel and Expense Management System (SAP Concur)
- 11) Self-Healthcare Management System (ASP HealthCare)

Product Design

- 1) OriginPro 9.0
- 2) Minitab 16 (statistical)
- 3) CatiaV6.0
- 4) Abaqus 7.0
- 5) SolidWork
- 6) Auto-Cad
- 7) Finite element analysis by Abaqus 7.0

18. CORE VALUES



19. REFEREE

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