RESEARCHER'S BACKGROUND

Name	Prof. Ir. Dr. Sharifah Rafidah Datu Wan Alwi
Academic Position	Professor
Faculty	Faculty of Chemical Engineering and Energy
Research Interest(s)	Resource Conservation, Pinch Analysis, Process Systems Engineering
Research Entity	Process Systems Engineering Centre (PROSPECT)
UTM Administrative Post (if any)	1. Director, Process Systems Engineering Centre (PROSPECT) (Sept 2011-Current) 2. Project Member for Development of *Sekolah Agama Universiti Teknologi Malaysia* (SAUTM) (Dec 2014 – current) 3. Niche Field Technical Committee – Conservation and preservation. 1 Mac to 30 Nov 2016. Johor-UTM Institute of Strategic Innovation. 4. Committee Member Research, Development and Commercialisation (8 Oct 2014 – current). 5. Committee Member, Main Committee for Research Universities Audit Preparation (3 April 2012 – 2 April 2014) 6. Member of University Management Group (Oct 2011 to current) 7. Task Force Committee for Publication of 'How to Get Yourself Employed (HTGYE)' Book (Aug 2013 to current) 8. Faculty of Chemical Engineering Energy Manager (2011- Current)
Appointment & Membership in Professional Bodies/Organisation (if any)	❖ **International** 1. **Chartered Engineer**, UK Engineering Council, May 2010-current 2. **Member**, International Water Association, 2006-current. 3. **Member, American Chemical Society (ACS),** 2011 – 2012 4. **Associate Member**, IChemE, 2008 - March 2010 5. **Member**, IChemE, March 2010-current ❖ **National** 1. **Registered Electrical Energy Manager,** Suruhanjaya Tenaga, Nov 2013-current. 2. **Professional Engineer,** Board of Engineers Malaysia, Dec 2010-current 3. **Member,** The Institution of Engineers, Malaysia (IEM), 19 April 2014 - current. 4. **Member,** Young Scientists Network, Academy of Sciences Malaysia (YSN-ASM), Dec 2012 - Dec 2015 5. **Graduate member**, Board of Engineer Malaysia, 2006-2010 6. **Certified Energy Manager Trainer**, AEMAS, 2009 to current 7. **Energy Professional**, Malaysian Energy Professional Association, Green Technology Malaysia (2009 current)

RESEARCH PROFILE

Indexed Publication	• Article: 89 • Review: 7 • Conference Paper: 23 • Article in Press: 6 • Review: 6 • Book Chapter: 3
Citation	*902*
H-index	*21*
Intellectual property rights	**Patent Filled** 1. Abbaszadeh, S., Wan Alwi, S. R. (29 Dec 2015). A method of producing a bio-adsorbent modified with metallic nanoparticles. UTM Patent. 2. Lee, S. J., **Wan Alwi, S. R.** and Manan, Z. A. (16 Jan 2013). PI 2013700090. A Method of Optimizing Efficiency of Water Network For Batch Processes. UTM Patent. 3. Handayani, T. P., **Wan Alwi, S.R.** and Manan, Z. A. (19 June 2012). PI 2012 700128 - A Cost Effective Heat Exchanger Network. UTM Patent. 4. Ching, H. H., **Wan Alwi, S.R.** and Manan, Z. A. (12 April 2012). PI 2011 002622 - Method for Optimal Water Network. UTM Patent. 5. Nam, S. K., **Wan Alwi, S.R.** and Manan, Z. A. (2 Feb 2012). PI 2012700018 - An Energy Recovery Method of A Heat Exchanger Network. UTM Patent. 6. **Wan Alwi, S.R.** and Manan, Z. A. (2010). PI 2010 002202 - A Method of Optimizing Energy Recovery in Heat Exchanger Network. UTM Patent. 7. **Wan Alwi, S.R.**, Manan, Z. A. and Ismail, A. (2009). PI2009 3218 - A system for facilitating simultaneous mass and energy minimization and method thereof. UTM Patent. 8. **Wan Alwi, S.R.**, Handani, Z. B., Hashim, H. and Manan, Z. A. (2009). PI2009 3813 - A system for obtaining water network involving multile contaminant for global water operations and method therefor. UTM Patent. 9. **Wan Alwi, S.R.** and Manan, Z. A. (2008). PI 2008 4792 . A method for acquiring a water network with minimum water targets. UTM Patent. 10. **Wan Alwi, S.R.** and Manan, Z. A. (2009) PI2008 5249 - A method for obtaining a minimum water network. UTM Patent. 11. Manan, Z. A., Foo, C. Y., Tan, Y. L. and **Wan Alwi, S. R.** (2008). PI 20071813 - A process for Planning water recovery and a product thereof. UTM Patent. **Patent Pending** 1. Liew, P. Y., **Wan Alwi, S. R.**, Manan, Z. A. (Submitted 11 July 2013). A Method for Simultaneous Targeting Total Site Energy Consumption with

Short Term ad Seasonal Energy Availability, Pending, UTM Patent.

2. Liew, P. Y., **Wan Alwi, S. R.**, Manan, Z. A. (Submitted 11 July 2013). A Technique to Examine the Multipe Sites Sensitivity Towards Process Operational Changes, Pending, UTM Patent.
3. Liew, P. Y., **Wan Alwi, S. R.**, Manan, Z. A. (Submitted 11 July 2013). A Method for Targeting Heat Stored, Externeal Utility Requirement and Storage Design Capacity in Total Site Centralised Utility System, Pending, UTM Patent.
4. Mohammad Rozali, N. E., **Wan Alwi, S. R.**, Manan, Z. A., Klemeš, J. J., Hassan, M. Y. (Submitted 19 Feb 2013). A process integration targeting method for hybrid power systems, Pending, UTM Patent.

Copyright

1. Manan, Z. A., **Wan Alwi, S. R.** and Lim, J. S. (2015). e-SMART - Online Sustainable Energy Managgement System. 22 Dec 2015. Copyright UTM. Ref: UTM.J.14.01/27.13/1JLD104(12).
2. **Wan Alwi, S. R.**, Chua, L. S., Mustaffa, A. A., S. N. H, Yunus, N. A., Mohammad Azmin (2015). Sustainable Integrated Solvent Design Algorithm for Extraction of High-Value Phytohemicals in Herbs. 17 Sept 2015. Copyright UTM. Copyright UTM. Ref: UTM.J.14.01/27.13/1JLD99(50).
3. Mohd Yusof, K., Hassan, H., Hashim, H., **Wan Alwi, S. R.,** Mustaffa, A. A., Zakaria, Z.Y., Jamaludin, M. Z. (2015). Case Study – Sustainable Living Challenge. 4 Aug 2015. Copyright UTM.
4. **Wan Alwi, S. R.**, Liew, P. Y., Manan, Z. A. (2014). Optimal Site – A Software for Optimal Design of Total Site Utility Systems. 25 Sept 2014. Copyright UTM.
5. Manan, Z. A., **Wan Alwi, S. R.** (2014). Optimal Heat – Software for the Rapid and Efficient Automation of Heat Recovery in Process Plants. 20 July 2014. Copyright UTM.
6. Manan, Z. A., **Wan Alwi, S. R.** (2014). Optimal Water – Software for Maximum Water and Energy Reduction in Industrial and Urban Buildings. 20 July 2014. Copyright UTM.
7. Manan, Z. A., **Wan Alwi, S. R.** (2014). Optimal Audit – A Software for Energy, Wastewater and Gas Emission Audit and Analysis. 20 July 2014. Copyright UTM.
8. Siong, K. Y. and **Wan Alwi, S. R.** Software for Heat of Polymerisation Process (SHPP). Copyright UTM 2013.
9. Manan, Z. A., **Wan Alwi, S. R.** (2013). Teaching materials for 5ms concept. Copyright UTM.
10. Manan, Z. A., **Wan Alwi, S. R.** (2013). Teaching materials for Process Synthesis and Creation. Copyright UTM.
11. Manan, Z. A., **Wan Alwi, S. R.**, Hashim, H. and Ab Muis, Z. (2013). Teaching

	materials for distillation sequence. Copyright UTM. 12. Manan, Z. A., **Wan Alwi, S. R.** (2013). Teaching materials for Heat Integration and Heat Exchanger. Copyright UTM. 13. Manan, Z. A., **Wan Alwi, S. R.** (2013). Teaching materials for Process Optimisation. Copyright UTM. 14. Manan, Z. A., Ooi, B. L., Foo, C. Y., Tan, Y. L., Tee, S. Y and **Wan Alwi, S. R.** Water-MATRIX- A Computer Software for Water and Energy Reductions in Industry and Public Buildings. Copyright UTM. 15. Manan, Z. A., Ooi, B. L., Foo, C. Y., Tan, Y. L., Tee, S. Y and **Wan Alwi, S. R.** Heat-MATRIX- A Computer Software for Water and Energy Reductions in Industry and Public Buildings. Copyright UTM. 16. Mohammad, M., Wan Alwi, S. R. et al. How to get yourself employed module. Copyright UTM 2010. 17. Manan, Z. A., and **Wan Alwi, S. R.** Optimal Audit- A Computer Software for Energy, Gas and Wastewater Audit and Improvement. Copyright UTM 2008.

RESEARCH SUPERVISION (AS MAIN SUPERVISOR AND CO-SUPERVISOR)

Completed	• PhD: 11 • MSc: 5
Current	• PhD: 7 • MSc: 2

AWARDS & RECOGNITIONS

Research Awards

1. Excellent Publication Award 2017, "A Process Integration Targeting Method for Hybrid Power Systems, Energy, 44(1), 6-10. Persatuan Saintis Muslim Malaysia (PERINTIS).
   - *Awarded to young muslim scientist with scopus paper citation more than 50*
2. Malaysia's Rising Star Award – Young Researcher Category, Putrajaya, 1 Nov 2016.
   - *Top 1% of the* Highly Cited Papers *published worldwide extracted from the Essential Science Indicators (ESI) for the period from 2006 to 2015 by Thompson Reuters.*
3. Honorable Mention and Runner-Up, ASEAN-US Science Prize for Women 2016 in Sustainable Energy Research, 28 October 2016, 9th ASEAN Ministerial Meeting on Science & Technology, Siem Reap, Cambodia.
   - *The award recognised early career women that have provide extraordinary contributions to increase the diversity of energy supply and to reduce the environmental impact of energy use in the ASEAN countries.*
4. Most Exalted Order of the Star of Sarawak – Officer (P.B.S.) @ in Malay: Darjah Yang Amat Mulia Bintang Sarawak. Pingat 'Pegawai Bintang Sarawak'. Sarawak State Award, 12 September 2015.
   - *The award is the highest state order in the state of Sarawak. It is conferred to those who rendered excellent service in the development of the state of Sarawak, and Malaysia as well.*
5. National Young Scientist Award, 23 May 2015, by Ministry of Science, Technology and Innovation (MOSTI), Malaysia, Majlis Inovasi Negara, Kuala Lumpur Convention Centre
   - *Recognition to the contributions and achievements of Young Scientists in Research and Development (R & D) in the field of science, technology and innovation (STI)*
6. ASEAN Young Scientist and Technologist Award (AYSTA) 2014, 25 August 2014, Bogor, Indonesia.
   - *An award given to one ASEAN scientist or technologist who has either shown considerable promise in, or made substantial contribution to research, development and innovation in the fields of Food, Energy and Water (FEW) in ASEAN region.*
7. PhosAgro/UNESCO/IUPAC Research Grant in Green Chemistry 2014, 22-23 September 2014, Moscow, Rusia.
   - *Grant awarded to talented young scientists for research in the area of green chemistry.*
8. Highly Cited Paper - Top 1% of the academic field of engineering based on a highly cited threshold for the field and publication year. September/October 2015; March/April 2015. Web of Science, Thomson Reuters.
   "Chew, K. H., Klemes, J., Wan Alwi, S. R. and Manan, Z. A. (2013). Industrial Implementation Issues of Total Site Heat Integration. Applied Thermal Engineering, 61: 17-25. Impact factor: 2.624 (Q1)."

9. Highly Cited Paper - Top 1% of the academic field of engineering based on a highly cited threshold for the field and publication year. September/October 2015. Web of Science, Thomson Reuters. *"Lim, J. S., Manan, Z. A., Wan Alwi, S. R. and Hashim, H. (2012). A review on utilisation of biomass from rice industry as a source of renewable energy. Renewable and Sustainable Energy Reviews. 16: 3084– 3094. doi:10.1016/j.rser.2012.02.051. Impact factor: 5.51 (Q1)."*
10. Top Authors. Most downloaded Articles, Sept 2012 to Aug 2013. Computers and Chemical Engineering (In Elsevier, IF: 2.452 (Q1)). Sun, K. N., Wan Alwi, S. R. and Manan, Z. A. (2013). *Heat exchanger network cost optimization considering multiple utilities and different types of heat exchangers.* Computers and Chemical Engineering. 49, 194-204. IF: 2.452 (Q1)
11. Best Poster Award, Sustainable Development of Energy, Water and Environment Systems (SDEWES) 2015 Conference, 27 September to 2 October 2015, Dubrovnic, Croatia.
12. Best paper award, Sustainable Development of Energy, Water and Environment Systems (SDEWES) 2013 Conference, 23 to 27 Sept 2013, Dubrovnic, Croatia.
13. Ranked 5th globally and 2nd in UTM as expert under the Distinguished Competency (DC#5) of 'Optimisation, Costs, Water'. Scival Spotlight 2012, Elsevier.
14. Highly Commended Sir Frederick Warner Prize 2011, IChemE UK, Presented during SOMCHE 29 Nov 2011.
    - *The award is presented for an individual, normally in the early stages of their career, who has shown exceptional promise in the field of sustainable chemical process technology, nuclear technology or in making chemical engineering more accessible to a wider scientific community.*
15. Shortlisted as Top 5 potential IChemE Young Engineer Award 2009, UK
    - *The young chemical engineer award recognises the individual who best demonstrates their achievements and tangible application of chemical, biochemical or process engineering skills to address important economic, environmental or social issues.*
16. Selected as one of 15 Green Talents of the year 2009 among 156 applicants from 43 countries by Federal Ministry of Education and Research Germany (30 August – 6 September 2009).
    - *An award for individuals with high potentials in sustainable development.*
17. The Prince Sultan bin Abdulaziz International Prize for Water (PSIPW) 2008, Arab Saudi - Water Category (For my PhD work)
    - *The Prince Sultan bin Abdulaziz International Prize for Water (PSIPW) is a Saudi Arabian scientific prize, established on 21 October 2002 by Prince Sultan Bin Abdulaziz Al Saud. It is a bi-annual international scientific award that accepts nominations from all over the world. The award was initiated to recognize and reward research advances in water-related fields on a worldwide basis.*
18. Maal Hijrah Award – Outstanding Achievement Category, 1429H/2008M – Sarawak State Level.
19. Young Scientist Network- Akademi Sains Malaysia, Dec 2012-Dec 2015.
    - *Young Scientists Network is under the umbrella of Academy of Sciences Malaysia. Member of this association are selected from the young, independent researchers who combine the highest level of research excellence with a demonstrated passion for delivering impact.*
20. Finalist, Research Award: UTM Outstanding Researcher Award 2010, Majlis Citra Karisma, 7 July 2011.

Exhibition Awards

1. Bronze Medal, Reactive Solvent Design for Chemical Absorption Process, 18th Industrial Art and Technology Exhibition (INATEX) 2016, 4-6 October 2016, Dewan Sultan Iskandar, UTM JB.
2. Silver Medal, Optimal Site © - A Software for Optimal Total Site Utility System Design, International Conference and Exposition on Inventions by Instituttions of Higher Learning (PECIPTA) 2015, 4 to 6 Dec 2015, Kuala Lumpur Convention Center.
3. Silver Medal, Nano Fruitysop-Fruit Peel Nano Adsorbent For Wastewater Heavy Metal Removal, INATEX 2015, 3 to 5 Nov 2015, Dewan Sultan Iskandar, UTM.
4. Bronze Medal, e-Phyto – Software for designing solvent formulation for enriched herb extract, INATEX 2015, 3 to 5 Nov 2015, Dewan Sultan Iskandar, UTM.
5. Jury Award and Gold Medal, Optimal Site © - A Software for Optimal Total Site Utility System Design, 16th Industrial Art And Technology Exhibition (INATEX 2014), 30 September - 2 October 2014, Dewan Sultan Iskandar (DSI), UTM.
6. Gold Medal, Optimal Power – Software for Optimal Hybrid Power System, 24th International Invention, Innovation & Technology Exhibition (ITEX 2013), 9-11 May 2013, Kuala Lumpur Convention Centre.
7. Gold Medal, Optimal Power – Software for Optimal Hybrid Power System, 14th Industrial Art And Technology Exhibition (INATEX 2012), 3-5 October 2012, Dewan Sultan Iskandar, UTM.
8. Bronze Medal, "How to Get Yourself Employed (HTGYE)", Category G: Special Academic Support Programme, Innovative Practices in Higher Education Expo 2014 (I-PHEX 2014).
9. Bronze Medal, A holistic cost effective minimum water network. 13th Industrial Art And Technology Exhibition (INATEX 2011). 16-18 Nov 2011. Dewan Sultan Iskandar, UTM.
10. Gold Medal, IPTA Expo on Research & Development 2005 – *Matrix: A Computer Software for Maximising Energy and Water Efficiency in Industry and UrbanSectors*. (The exhibition has now been branded as PECIPTA (International Exposition of Research and Inventions of Institutions of Higher Learning), Ministry of Higher Education, 2 Oct 2005.

11. Silver Medal, Water MATRIX – A Computer Software for Water and Energy Reductions in Industry and Public Buildings, EXPO Science, Technology & Innovation 2004, Ministry of Science and Technology, 29 Aug 2004.

Teaching Awards

1. Award of Excellent, Active Blended Learning Course in Sem 1 – 2015/2016, Course SKKK4153-03 Plant Design. UTM Academic Leadership (UTMLead).
2. Excellence Award – Most active teacher in using blended learning technique. (*Anugerah Kecemerlangan - Pengajar Paling Aktif menggunakan Kaedah Pembelajaran Teradun*), Course SKKK4153-03 Plant Design, Sem 201420151. UTM Academic Leadership (UTMLead).

Entrepreneurship Awards

1. Winner, Superb Teraju, 2016, eSmart – Energy management system with certification (RM500,000).
2. Supervisor, Semi-finalist, Southeast Asia & Taiwan Universities (SATU) Summit on Industry-Academia Collaboration and Business Plan Competition at the International Level 2007.
3. Supervisor, Top 3 winner, Southeast Asia & Taiwan Universities (SATU) Business Plan Competition at the National Level 2007.
4. National Champion for Business Plan Competition 2006, Multimedia Development Corporation Sdn Bhd, 29 Mac 2006.
5. Champion, UTM-MARA-MDC Business Plan Competition 2005, 3 Mac 2005.

CONTACT DETAILS

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