

Summary of Qualification, Experience and Expertise of Dr. Shahrom Mahmud (Dec 2011)



ITEMS	DESCRIPTION	REMARKS
Academic Qualification	PhD Nano-Physics (Universiti Sains Malaysia)	Zinc Oxide Nanostructures & Optoelectronics
	MSc Physics (Universiti Sains Malaysia)	Semiconductor / Varistor Technology
	BSc (Iowa State University USA)	Materials/Ceramic Engineering
Working Experience	ENGINEER in MNCs [10 years] (Thomson, Sumitomo, Nippon Steel, Acme, Rolnic)	Process engineering, machine buy-off, ISO 9002 project, FMEA, research & development, product prototyping, production control, failure analysis, quality control, factory set-up, European Standards implementation. <i>Products – ZnO varistors, ferrites, CERDIPs, ceramic tiles, tableware.</i> Commercialisation of product prototypes, brochure making, sample-making, pilot order dealing, and marketing. <i>Have mass produced 1 billion components.</i> Set up failure analysis system to solve product defects Experience in building a factory, bottom-up.
	LECTURER for Universiti Sains Malaysia and colleges [14 years]	Engineering Physics program, Member of NanoOptoelectronic Research (NOR) Lab. Research – Biosafe nanoparticles, semiconductors, ferrites, composites. Subjects – Instrumentation, Engineer in Society and MSc lab. <i>Offshore lecturing for Deakin Univ and Northumbria Univ at KDU College and Inti College.</i> Subjects - Mechatronics, Physics 1-2, Thermodynamics, Maths 1-4, Statics, Dynamics, AC-DC Circuit Analyses, Semiconductor Devices, AC Lab, Material's Strength, Dynamics of Machines, Final Projects
Professional Activities	International CONSULTANT	<ul style="list-style-type: none"> • Integrated Resource Management, Canada [Dr P.Robinson]– ZnO World Expert • Binani Zinc Limited, Kochin, Kerala, India – Zinc Ingot Factory • Foseco International Ltd, U.K. [Mike Hankin]– ZnO Crucible Manufacturer • Statum Resources, Australia [Murray Lines]– Mineral Expert • Appprofit Zinc Oxide Manufacturing Co Ltd. – ZnO Factory • Transient Resources Co Ltd - Varistor Surge Protection Products
	Consultant for IRPA project	Photoacoustic Project, Physics Dept, UPM (IRPA # 02-02-04-0132 EA001)
	PATENTS	<ul style="list-style-type: none"> • PCT No.: PCT/MY2010/000051 for high performance varistors • Malaysian Patent File # PI2010003812 • Taiwan Patent File # 100112706
	Invited Plenary Speaker	<ul style="list-style-type: none"> • World Innovation Forum 2007 organized by U.N. University & RCE-USM • The 6th APEC Forum for the Gifted in Science 2010, Seoul Korea
	Expert Committee Member	<ul style="list-style-type: none"> • Expert Panel Member for New Undergraduate and Postgraduate Programs of Fundamental Applied Science Dept., Universiti Teknologi Petronas on 10 Mar 2011 • Advisory Committee Member for International Conference on Fundamental & Applied Sciences (ICFAS2012) organised by UTP
	REVIEWER for 5 ISI Journals	Inorganica Chimica Acta (ELSEVIER), Materials Science and Engineering B (ELSEVIER), IEEE Transactions on Nanotechnology TNANO (IEEE-USA), Materials Letters (ELSEVIER), Chemical Engineering Journal (ELSEVIER)
Others	AWARDS	<ul style="list-style-type: none"> • Gold medal & Best award MTE 2010 (Nano ZnO Coating – principal investigator) • Gold medal award PECIPTA 2009 (ZnO Varistors– principal investigator) • Silver medal GENEVA 2011 (Nano UV ZnO Coating – principal investigator) • Silver medal award ITEX 2008 (ZnO nanoparticles – principal investigator) • Bronze medal award SIIF 2010 Korea (ZnO Varistors – principal investigator) • University's Excellent Service Award (research product) by USM for 2009
	Main Supervisor	<ul style="list-style-type: none"> • Supervising 5 PhD & 2 MSc students on ZnO, composites, varistors, biomedical • Supervised over 40 BSc and 8 MSc final year projects
	Publications	8 ISI journal papers, 10 journal papers, 3 invited, 3 IEEE-SCOPUS papers and 13 proceedings. Total of over 37 publications. (First Author for 26 publications)
		URL of Research ID http://www.researcherid.com/rid/A-7754-2011
		Kindly write my full name in Google/Yahoo and surf

Working Experience

2007-present	<u>Lecturer-Researcher</u>	Nano Optoelectronics Research Lab, School of Physics, Universiti Sains Malaysia
2005-present	<u>International Consultant</u>	Integrated Resource Management (Canada), Stratum Resources (Australia), Binani Zinc Ltd. (India), Transient Resources Sdn Bhd (Malaysia), Approfit Zinc Oxide Mfg. Co. Ltd.
1997-2007	<u>Lecturer</u>	Northumbria University (UK), Deakin University (Australia), Bradford University (UK) - offshore programs at KDU and INTI college.
1996-1997	<u>Superintendent</u>	Sumitomo-Globetronics, manufactures ceramic IC alumina substrates (Japanese factory)
1993-1996	<u>Engineer</u>	Thomson Electronics, manufactures ZnO varistors & multilayer capacitors (French co.)
1991-1993	<u>Engineer</u>	Nippon Steel and Acme, make ferrite cores and EMI filters (Japanese & American factories)
1988-1991	<u>Engineer</u>	Rolnic Ceramic, manufactured ceramic tiles, fast-firing technology (Italian technology)



Dr Shahrom Mahmud shahromx@yahoo.co.uk

BSc. Ceramic Engineering, Iowa State University, USA [1986]
 MSc. Semiconductor (Physics), Universiti Sains Malaysia [2004]
 Phd Nano-Materials (Physics), Universiti Sains Malaysia [2008]

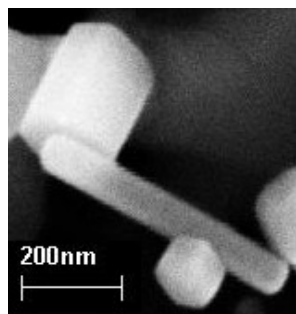
After Shahrom returned home from the States, he worked as an engineer in a pioneering team that set up a ceramic tile factory (Rolnic Ceramic) that utilized state-of-the-art technology from Carfer, Italy. He was involved in the machinery commissioning, product prototyping and production. Later he joined Nippon Steel and Acme Components that manufacture magnetic ferrite cores for flyback transformers, antennas and EMI filters. At Nippon Steel, he adopted the Japanese culture of hardwork and communal commitment.



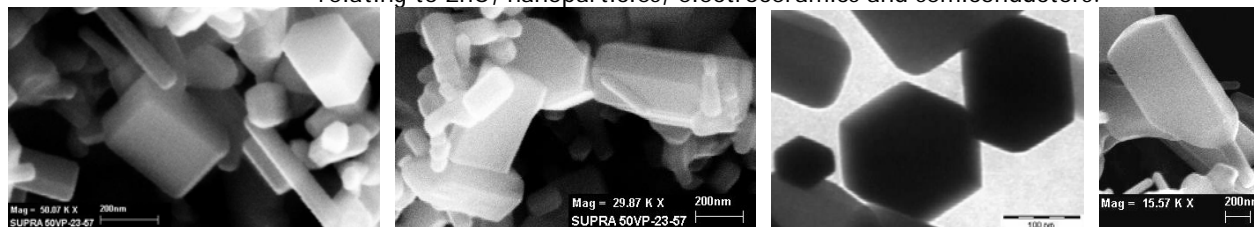
Shahrom assisted Thomson Electronics in improving the varistor product line by upgrading raw material control, ball milling and granulation processes, and sintering control, resulting in superior yield and quality. He was also involved in the R & D of new varistor prototypes. At Sumitomo, Shahrom managed the front-of-line for the ceramic substrate line. Due his desire for mental growth, he pursued his MSc in semiconducting varistors and completed his Phd in ZnO nano-material physics. He has published over 37 research papers on varistors, nano ZnO and electroceramics in peer-reviewed journals, IEEE proceedings and conferences.



Shahrom's research work has attracted many industrialists and academia. Currently he is providing consultation and performing research work with Zamzam Zakaria from Approfit ZnO Mfg Co. Ltd, Dr. Peter J. Robinson from Integrated Resource Management (Canada) and Murray Lines from Stratum Resources (Australia). Most of his nanocrystals are synthesized using factory furnaces where he developed a new nanofabrication, CFCOM process, that is a *subminute* (less than 60s) method to make nanostructures. CFCOM invention has won an ITEX 2008 award for *new manufacturing process* category. Moreover, Shahrom's work on ZnO varistors has won a gold medal in PECIPTA2009, Malaysia's prestigious product competition. Another gold medal and *Best* award were also won by Shahrom for Nano ZnO coating for polymer textiles in MTE2010 - a product that transforms normal fabrics into UV absorbing textiles with near-zero UV transmission. Shahrom is a *journal reviewer* for IEEE Transactions on Nanotechnology (TNANO) and three ISI journals (Elsevier). With a team of 5 PhD and 2 MSc students, Shahrom is now investigating the biomedical-optoelectronic properties of nano ZnO. He also forms collaboration with several biomedicine scientists who are Dr. Dasmawati, Dr. Md. Azman, Dr. Habsah, Dr. Sam'an and Dr. Zainoodin.



A strong believer in knowledge sharing, Shahrom shares his work that is freely available at <http://shahrom.com>. Packed with a decade-long industrial expertise in 5 multinational corporations and 14 years research work with over 37 paper publications, Shahrom offers effective solutions to industrial/technical problems relating to ZnO, nanoparticles, electroceramics and semiconductors.



CV PROFILE



Dr. Shahrom Mahmud

BSc. Ceramic Engineering (Iowa State University, USA)

MSc. Semiconductor (USM), PhD Nanomaterial-Physics (USM)

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Homepage: <http://shahrom.com/>

Working experience:

2007-present	Lecturer-Scientist	NanoOptoelectronic Research and Technology (NOR) Lab, School of Physics, USM.
2005-present	Inventor	Gold medal & Best award MTE 2010, Gold medal PECIPTA 2009, Bronze medal SIIF2010, Silver medal GENEVA 2011, Silver medal ITEX 2008
2005-present	International Consultant	Integrated Resource Management (IRM) [Canada] Binani Zinc Limited [India] Foseco International Limited [Mike Hankin, England] Stratum Resources [Murray Lines, Australia] Approfit Zinc Oxide Manufacturing Sdn Bhd Transient Resources Sdn Bhd (varistors)
2005-present	Reviewer	5 ISI journals – Materials Science Engineering B, IEEE Transactions on Nanotechnology, Inorganica Chimica, Materials Letters and Chemical Engineering Journal. 1 book review – John Wiley & Sons (UK)
1997-2007	Lecturer	Northumbria University, Deakin University, Bradford University – offshore programs at KDU and INTI college.
1996-1997	Superintendent	Sumitomo-Globetronics, manufactures ceramic IC alumina substrates (Japanese-Malaysian co.)
1993-1996	Engineer	Thomson Electronics, manufactures ZnO varistors, arresters & multilayer capacitors (French corp.)
1991-1993	Engineer	Nippon Steel and Acme, make ferrite cores and EMI filters (Japanese and American-Taiwan co.)
1988-1991	Engineer	Rolnic Ceramic, manufactured ceramic tiles, fast-firing technology (Italian-Malaysian co.)

RESEARCH

1	Appofit Project	Joint-venture effort with one ZnO factory (Malaysia) in large scale fabrication of ZnO nanopowder [ongoing]
2	Aussie Project	Provided consultation to Australian company on manufacturing of ZnO powder and products [completed]
3	India Project	Provided consultation to a major Zinc factory (Binani Zinc Ltd Kochin Kerala) on the fabrication of nano ZnO [completed]
4	Arrester Project	Collaborating with one arrester factory (Transient Resources Sdn Bhd) on ZnO varistors [completed]
5	Biosafe Nanoparticles	Synthesis and characterization of biosafe nanoparticles including antibacterial studies. Collaboration with Microbiology Dept and Dental School of USM. [ongoing]
6	Surge Protection	Fabrication and characterization of electrical surge devices including varistors, arresters and limiters.
7	Dental Nanoparticles	Work on biosafe nanoparticle in dental polymer nanocomposites. Also work on ZnO eugenol. Collaboration with Dental School of USM [ongoing]
8	Polymer Nanocomposites	Joint effort with Polymer Composite Group of USM Engineering Campus. Focus on biosafe nanoparticles embedded in polymer matrix. [ongoing]
9	Sensors	Fabrication of sensory devices for light and gases sensing [ongoing].

Past Projects - I have done R & D work during my decade-long industrial attachment as an engineer. In those days, my work dealt with ceramic glazes, clay bodies, porcelains, ceramic tile developments, ferrite failure analyses, crack-shrinkage analyses, product prototyping, granule size distribution optimization, powder processing, pressing impacts, microstructural-electrical correlations, sintering profiles, silver-electroding, and others.

TEACHING

For over a decade, I have taught over 20 subjects dealing with Maths, Calculus, Differential Equations, Multivariable Functions, Engineering Physics, EM fields, Electronics, Circuit Theory, AC Lab, Semiconductor Devices, Materials Science, Mechanics, Strength of Materials, Dynamic of Machines, Electro-Mechanical Systems, Thermodynamics, Materials Technology and Engineer in Society.

My past postings involved offshore lecturing for Deakin University (Australia), Northumbria University (UK) and Bradford University (UK).

Currently I am teaching Instrumentation (ZAT283), Engineer in Society (ZKT321) and handling BSc/MSc Laboratories at Universiti Sains Malaysia.

SUPERVISION

1	Jalal Rouhimaleh	Phd	active	Using Nanolithography to make nano electrodes (Main Supervisor)
2	Ling Chuo Ann	Phd	active	Antibacterial properties of ZnO (Main Supervisor)
3	Rabab Khalid Sendi	Phd	active	Use of nano ZnO in varistors (Main Supervisor)
4	Siti Khadijah Mohd. Bakhori	Phd	active	ZnO eugenol (Main Supervisor)
5	Amna Hassan Sirelkhatim	Phd	active	ZnO Biomedical Applications (Main Supervisor)
6	Ashraf Rohinim Asari	Phd	pending	High performance ZnO varistors (Main Supervisor)
7	Muhammad Aizuddin Abdul Rahman	MSc	active	ZnO biocomposites (Main Supervisor)
8	Asma Fatehi	MSc	active	ZnO varistor composite (UPM) Co-Supervisor
9	Tan Wei Kah	MSc	active	Annealing impact on ZnO
10	Fairooz Johan	MSc	done	Transient thermal degradation of ZnO varistors
11	Afaf Milad Ali Milad	MSc	done	Ambient temperature impact on ZnO varistors
12	Azwani Abdul Rahim (Infineon)	MSc	done	CMOS defect failure analysis (Co-sup: Dr Ghazali Omar)
13	Shahida Ishak	MSc	done	ZnO-Al polymer nanocomposite
14	Suhaida Dila Safian	MSc	done	ZnO-Al polymer nanocomposite
15	Nor Izati Nizza Ismail/ Nurul Liyana Razali	BSc	active	Bio-composite using zinc-ZnO as filler
16	Simon Lau Yew Hock/ Wong Wai Yeap	BSc	active	Optical-electrical & frequency response of ZnO discs
17	Nazurah Hanim Mamat / Lailatul Hazwani Saad	BSc	done	Optical-structural characterisation of ZnO and toxicology studies
18	Ng Choon Kiat / Nurhana Afifa binti Jamal	BSc	done	Optical-electrical & frequency response of PP/ZnO composite
19	Ng Chee Wei / Kevin	BSc	done	Frequency response of Nickel Zinc Ferrites
20	Norsunarti Shafie	BSc	done	Device for Sensory Applications
21	Arni Haryati Abu Seman/ Dzurini Halib	BSc	done	Low cost synthesis of ZnO nanostructures
22	Nuuralifah Mohd Misrun / Ummu Hakamah Hamyadi	BSc	done	Optoelectronic responses of ZnO disc

PUBLICATIONS

A	Shahrom Mahmud	PhD Thesis (2008)	Synthesis and Characterisation of Zinc Oxide Nanostructures
B	Shahrom Mahmud	MSc Thesis (2004)	The Effects of Zinc Oxide Microstructure on the Electrical Characteristics of Low-Voltage Ceramic Varistors

No	Impact Factor ISI Journals
1	Mohd Firdaus Omar, Hazizan Md Akil, Zainal Arifin Ahmad, and <u>Shahrom Mahmud</u> ; <i>The Effect of Loading Rates and Particle Geometry on Compressive Properties of Polypropylene/Zinc Oxide (PP/ZnO) Nanocomposites: Experimental and Numerical Prediction</i> ; Polymer Composites, 33(1), pp. 99-108, 2012.
2	Jalal Rouhi, <u>Shahrom Mahmud</u> , Sabar Derita Hutagalung and Saeid Kakooei; <i>Fabrication of nano-gap electrodes via nano-oxidation mask by scanning probe microscopy nanolithography</i> , Journal of Micro/Nanolithography, MEMS, and MOEMS, 10(4), art. 043002 ,2011.
3	<u>Shahrom Mahmud</u> ; <i>One-dimensional growth of zinc oxide nanostructures from large micro-particles in a highly rapid synthesis</i> , Journal of Alloys and Compounds, 509 (9), pp. 4035-4040, 2011.
4	Ong Hui Lin, Hazizan Md Akil and <u>Shahrom Mahmud</u> ; <i>Effect of particle morphology on the properties of nanoZnO/polypropylene composites</i> , Advanced Composite Letters, 8 (3), pp. 77-83, 2009
5	<u>Shahrom Mahmud</u> , Mat Johar Abdullah, and Mohd. Zamzam Zakaria; <i>Growth model for nanoplates and nanoboxes of zinc oxide</i> , Journal of Synthesis and Reactivity in Inorganic, Metal-organic and Nano-metal Chemistry, 36 (1), pp. 17-22, 2006
6	<u>Shahrom Mahmud</u> , Mat Johar Abdullah, John Chong, Abdul Karim Mohamad and Mohd Zamzam Zakaria; <i>Growth model for nanomallets of zinc oxide from a catalyst-free combust-oxidised process</i> , Journal of Crystal Growth, 287 (1), pp. 118-123, 2006
7	<u>Shahrom Mahmud</u> , Mat Johar Abdullah, and Ghanim A. Putrus; <i>Increase in upturn power dissipation of surge suppressors due to highly defective nanostructure of zinc oxide</i> , Journal of Synthesis and Reactivity in Inorganic, Metal-organic and Nano-metal Chemistry, 36(1), pp. 59-64, 2006
8	<u>Shahrom Mahmud</u> , Mat Johar Abdullah, John Chong, Abdul Karim Mohamad, and Mohd. Zamzam Zakaria; <i>Nanostructure of ZnO fabricated via French Process and its correlation to electrical properties of semiconducting varistors</i> , Journal of Synthesis and Reactivity in Inorganic, Metal-organic and Nano-metal Chemistry, 36 (2), pp. 155-159, 2006

No	Peer-reviewed Journals / Publications
9	Nuur Fhatin Najwa Abdullah, Muhamad Salman Ahmed Kamil and <u>Shahrom Mahmud</u> , <i>Applied nanoscience: Using nano zinc oxide to enhance ultraviolet protection of commercial talcum powder</i> , APEC Journal of Youth Scientists, 3, pp.122-132 , 2011.
10	<u>Shahrom Mahmud</u> , <i>Use of nanotechnology to invent high quality varistor</i> , United Nation's Journal of Asian and Pacific Centre for Transfer of Technology, 27 (1), p.12, Jan-Feb 2010 (ISSN: 0256-9957)
11	<u>Shahrom Mahmud</u> , <i>High Performance Varistors</i> , Asia Research News 2010, ResearchSEA Limited Cambridge UK, p. 19, 2010 (ISSN: 2042-0536)
12	<u>Shahrom Mahmud</u> and Mat Johar Abdullah; <i>Tapered head of ZnO nanorods</i> , Journal of Solid State Science and Technology, 15, (1), pp. 108-115, 2007

13	<u>Shahrom Mahmud</u> and Mat Johar Abdullah; <i>New growth equation for ZnO rods</i> , Jurnal Fizik Malaysia, 27, pp. 77-79, 2006
14	<u>Shahrom Mahmud</u> , Mat Johar Abdullah and Zakaria Mohd. Amin; <i>The influence of cobalt trioxide (Co₂O₃) on the nonlinear property and energy-handling capability of zinc oxide (ZnO) low-voltage varistors</i> , Journal of Solid State Science and Technology Letters, 9 (1), pp. 108-116, 2002
15	<u>Shahrom Mahmud</u> , Mat Johar Abdullah and Zakaria Mohd. Amin; <i>The role of manganese trioxide (Mn₂O₃) in enhancing the nonlinearity coefficient of zinc oxide low-voltage varistors</i> , Journal of Solid State Science and Technology Letters, 9 (1), pp. 117-126, 2002
16	<u>Shahrom Mahmud</u> , Mat Johar Abdullah and Zakaria Mohd. Amin; <i>The relationship between sintering profiles and electrical properties of low-voltage zinc oxide varistors</i> , Solid State Science and Technology, 10 (2), pp. 145-154, 2002
17	Abdul Halim Shaari, Mansor Hashim and <u>Shahrom Mahmud</u> ; <i>Preparation and superconducting properties of the tin doped Y-Ba-Cu-O compounds</i> , Seramik Nusantara, 1, pp. 229-240, 1990

No	IEEE Papers (ISI-Scopus cited)
18	<u>Shahrom Mahmud</u> and Mat Johar Abdullah; <i>Nanotripods of ZnO, NanoSingapore 2006: IEEE Conference on Emerging Technologies - Nanoelectronics - Proceedings 2006</i> , art. no. 1609767, pp. 442-446
19	<u>Shahrom Mahmud</u> , Mat Johar Abdullah, Zakaria Mohd. Amin; <i>Power Dissipation of ZnO-based Metal Oxide Varistors (MOVs) for Electronic Circuit Protection, International Conference on Solid-State and Integrated Circuits Technology Proceedings, ICSICT 2004</i> , 3, pp. 2366-2369
20	<u>Shahrom Mahmud</u> , Mat Johar Abdullah, and Zakaria Mohd. Amin; <i>Novel Modelling for High-Field Current-Voltage Characteristics of Semiconducting Varistors, Proceedings ICSE 2004 - 2004 IEEE International Conference on Semiconductor Electronics</i> , art. no. 1620861, pp. 164-167

No	Invited / Plenary Presentations
21	<u>Shahrom Mahmud</u> ; <i>Application of Biosafe Nanoparticles for Global Sustainability</i> , Invited Paper in The 6 th APEC Forum for the Gifted in Science 2010, 17-19 May 2010, Seoul, Korea. Paper published as Proceedings of the APEC Forum for the Gifted in Science, vol. 6, pp21-30, May 2010 (ISSN 1976-7595) Role: Representative for MOHE & Malaysian government.
22	<u>Shahrom Mahmud</u> , Peter J. Robinson, Mat Johar Abdullah, Mohd Zamzam Zakaria, John Chong, Abdul Karim Mohamed, Azmi Zakaria, Mohd Zobir Hussein and Zahid Rizwan; <i>University-Industry Collaboration in ZnO Nanotechnology</i> , Invited Plenary Paper in United Nation's World Innovation Forum 2007 (WIF2007), 10-12 Aug 2007, Kuala Lumpur, Malaysia
23	Peter J Robinson and <u>Shahrom Mahmud</u> ; <i>Zinc Oxide Manufacturing – French and Other Processes</i> , Invited Plenary Paper in 2008 International Zinc Oxide Industry Conference, 27 February 2008, Scottsdale, Arizona, USA. Refer http://www.zinc.org/

No	National and International Conferences
24	Jalal Rouhi, <u>Shahrom Mahmud</u> , Sabar Derita Hutagalung and Saeid Kakooei; <i>A fabrication technique for nano-gap electrodes by atomic force microscopy nanolithography</i> ; Proceedings of The International Conference for Nanomaterials Synthesis and Characterization 2011 (INSC 2011), 4-5 July 2011, Seri Kembangan, Selangor, Malaysia

25	Asma Fatehi, Mansor Ahmad, B.Z. Azmi, and <u>Shahrom Mahmud</u> ; <i>Fabrication and Electrical Characterization of New Polymer Composite with Varistor-like Behaviour</i> ; Proceedings of Malaysia Polymer International Conference 2011 (MPIC2011), 19-20 October 2011, Bangi-Putrajaya, Malaysia.
26	Ling Chuo Ann, <u>Shahrom Mahmud</u> , and Siti Khadijah Mohd Bakhori; <i>Effects of Annealing Treatment on Photoluminescence and Structural Properties of ZnO Nanostructures</i> ; Abstract of 26th Regional Conference on Solid State Science and Technology 2011 (RCSST2011), 22-24 November 2011, Seremban, Negeri Sembilan, Malaysia.
27	Siti Khadijah Mohd Bakhori, Ling Chuo Ann and <u>Shahrom Mahmud</u> , <i>Photoluminescence and Raman Studies of Annealed ZnO Nanostructures</i> ; Abstract of 26th Regional Conference on Solid State Science and Technology 2011 (RCSST2011), 22-24 November 2011, Seremban, Negeri Sembilan, Malaysia.
28	Teh Chong Boon, Dasmawati Mohamad, Habsah Hasan and <u>Shahrom Mahmud</u> ; <i>In vitro study of antibacterial properties of locally synthesized zinc oxide on oral bacteria</i> ; 7 th Student Scientific Conference, 22 October 2009, School of Dental Science, Universiti Sains Malaysia..
29	<u>Shahrom Mahmud</u> , Hazizan Md Akil, Peter J. Robinson, Mohd. Zamzam Zakaria and Ong Hui-Lin; <i>Industrial Research on Nano ZnO: Synthesis, Structure and Morphological-Optical Correlations</i> , Proceedings of International Conference on Nanoscience and Nanotechnology 2008 (NANO-SciTech 2008), 18-21 November 2008, Universiti Teknologi MARA, Shah Alam, Selangor, Malaysia
30	<u>Shahrom Mahmud</u> and Mat Johar Abdulla;, <i>Role of irregularly-shaped cluster in ZnO nanostructures</i> , Regional Conference on Solid State Science and Technology (RCSST'05), December 19-21,2005, Kuantan, Malaysia.
31	<u>Shahrom Mahmud</u> and Mat Johar Abdullah; <i>Nanorods of ZnO in subminute growth approach</i> , Proceedings of International Conference on MEMS and Nanotechnology, pp319-323, March 14-15, 2006, Kuala Lumpur, Malaysia
32	<u>Shahrom Mahmud</u> and Mat Johar Abdullah; <i>Electrical nonlinearity of low-voltage varistors and its relation to interfacial trap density and nanocrystals</i> , 3 rd International Conference on Materials for Advanced Technologies (ICMAT2005), July 3-8 2005, Singapore
33	<u>Shahrom Mahmud</u> , Mat Johar Abdullah and Mohd Zamzam Zakaria; <i>Nanosopic inhomogeneity of French process in large scale manufacturing of zinc oxide</i> , Proceedings of International Meeting on Frontiers of Physics (IMFP2005), 25-29 July, 2005, Seri Kembangan, Selangor, Malaysia
34	<u>Shahrom Mahmud</u> and Mat Johar Abdullah; <i>Four dimensional analysis for structural modeling of zinc oxide nanostructures</i> , International Advanced Technology Congress (ATCi2005), Dec 6-8 2005, Kuala Lumpur, Malaysia
35	<u>Shahrom Mahmud</u> ; <i>The manipulation of grain size and additives in zinc-oxide varistor manufacturing</i> , XIII Regional Conference on Solid State Science and Technology (RCSST'96), Johor Baru, 10-11 Dec 1996, Johor Baru, Johor, Malaysia.
36	Mansor Hashim and <u>Shahrom Mahmud</u> ; <i>Materials Formulation and Processing Technology For Ferrite Antenna Cores</i> , Proceedings of Seminar on Commercialisation of Malaysian R & D, MINDEX/INNOTEX, pp.45-52, August, 1996, Kuala Lumpur, Malaysia

SEMINARS

No	Invited / Plenary Presentations
1	<u>Shahrom Mahmud</u> ; <i>Application of Biosafe Nanoparticles for Global Sustainability</i> , Invited Paper in The 6 th APEC Forum for the Gifted in Science 2010, 17-19 May 2010, Seoul, Korea. Role: Representative for MOHE and Malaysian government.
2	<u>Shahrom Mahmud</u> , Peter J. Robinson, Mat Johar Abdullah, Mohd Zamzam Zakaria, John Chong, Abdul Karim Mohamed, Azmi Zakaria, Mohd Zobir Hussein and Zahid Rizwan; <i>University-Industry Collaboration in ZnO Nanotechnology</i> , Invited Plenary Paper in United Nation's World Innovation Forum 2007 (WIF2007), 10-12 Aug 2007, Kuala Lumpur, Malaysia
3	Peter J Robinson and <u>Shahrom Mahmud</u> ; <i>Zinc Oxide Manufacturing – French and Other Processes</i> , Invited Plenary Paper in 2008 International Zinc Oxide Industry Conference, 27 February 2008, Scottsdale, Arizona, USA. Refer http://www.zinc.org/

	COMMUNITY SERVICES
1	<u>PETROSAINS Exhibition and Seminar April 2010</u> Provided Petrosains Sdn Bhd with exhibit items (Nano-UV Coating Kit) Conducted a public seminar in Petrosains building on 18 April 2010 Product Exhibits: Coating Kit for Nano-UV protection and one Umbrella coated with UV nanocoating. Role: Exhibitor and Invited Speaker
2	<u>Product Exhibition during USM Convocation Expo 2010</u> Location: Main campus of USM Date: 3-8 August 2010 PRODUCT: Nano-UV Coating for Outdoor Textiles The product won Gold medal and Best award in MTE 2010. Role: University Representative
3	<u>Product Exhibition during Islamic Innovation Carnival 2010</u> Location: Sultan Mizan Mosque, Putrajaya Date: 5-8 August 2010 PRODUCT: Nano-UV Coating for Outdoor Textiles The product won Gold medal and Best award in MTE 2010. Role: University Representative
4	<u>PermataPINTAR Project 2010-2011</u> Research project with gifted high school students Title: UV Absorption Properties of Talcum Powder One research paper is being prepared for publication. Role: Mentor
5	<u>Expert Panel for Universiti Teknologi Petronas</u> Expert Panel for new undergraduate and postgraduate programs of Fundamental Applied Science Department, Universiti Teknologi Petronas, on 10 March 2011. Role: Expert Panel
6	<u>Advisory Committee Member for the 2nd International Conference on Fundamental and Applied Sciences (ICFAS 2012)</u> Technical Committee Member for an international conference (ICFAS2010) organized by the Fundamental Applied Science Department, Universiti Teknologi Petronas. Role: Advisory Committee Member

OTHERS

PATENT FILING	
1	<p><u>Patent Cooperation Treaty (PCT)</u> PCT Application Number: PCT/MY2010/000051 Filing Date: 12 April 2010 Patent Title: Ceramic Composition, Low Voltage Zinc Oxide Varistors Made from The Ceramic Composition and Process for Manufacturing the Low Voltage Zinc Oxide Varistor Role: Principal Inventor</p>
2	<p><u>Malaysia Patent</u> Application Number: PI 2010003812 Filing Date: 13 August 2010 Patent Title: Ceramic Composition, Low Voltage Zinc Oxide Varistors Made from The Ceramic Composition and Process for Manufacturing the Low Voltage Zinc Oxide Varistor Role: Principal Inventor</p>
3	<p><u>Taiwan Patent</u> Application Number: 100112706 Filing Date: 15 June 2011 Patent Title: Ceramic Composition, Low Voltage Zinc Oxide Varistors Made from The Ceramic Composition and Process for Manufacturing the Low Voltage Zinc Oxide Varistor Role: Principal Inventor</p>

INVENTION AWARDS	
1	<p><u>Gold Medal and Best Award MTE 2010</u> in the Malaysian Technology Exposition 2010 (MTE 2010), 4-6 February 2010, PWTC, Kuala Lumpur, Malaysia. Gold medal for “Nano-UV Coating for Umbrellas, Shades and Textiles with Near-Zero UV Transmission”, under category of textiles. Co-inventors are PM Hazizan and Dr Ong Hui Lin. Role: Principal Investigator</p>
2	<p><u>Silver Medal GENEVA 2011</u> in the 39th International Exhibition of Inventions, Geneva, Switzerland. Silver medal for “Nano-UV Coating for Umbrellas, Shades and Textiles with Near-Zero UV Transmission”, under textiles category. Co-inventors PM Hazizan and Dr Ong Hui Lin. Role: Principal Investigator</p>
3	<p><u>Gold Medal for PECIPTA 2009</u> in the International Exposition of Research and Invention of Institution of Higher Learning 2009 (PECIPTA 2008), 8-10 October 2009, Kuala Lumpur, Malaysia. Gold Medal for “High Performance Varistors”, under physical science and engineering. Role: Principal Investigator</p>
4	<p><u>Bronze Medal 2010</u> in the Seoul International Invention Fair (SIIF 2010), 2-5 December 2010, Seoul, Korea. Bronze medal for “High Performance Varistors”, under category of electronics. Role: Principal Investigator</p>
5	<p><u>Silver Medal for ITEX 2008</u> in the 19th International Invention, Innovation and Technology Exhibition (ITEX 2008), 9-11 May 2008, Kuala Lumpur, Malaysia. Silver Medal for “Novel Industrial Nanofabrication of ZnO Nanostructures”, under category of new manufacturing process. Role: Principal Investigator</p>

6	USM Excellence Award (Sanggar Sanjung) 2009 under research product category. Product is ZnO High Performance Varistors.
7	USM Merit Award (Sanjungan) 2008 under research product category. Product is ZnO nanoparticle via collaboration with industry. Co-inventors are Prof Mat Johar from USM and Mohd Zamzam Zakaria from Approfit Zinc Oxide Manufacturing Sdn Bhd.

PUBLICATION AWARD

1	USM Merit Award (Sanjungan) for year 2009 under ISI journal publication category for “ <i>Effect of particle morphology on the properties of nanoZnO/polypropylene composites</i> ”, Ong Hui Lin, Hazizan Md Akil and Shahrom Mahmud ; <i>Advanced Composite Letters</i> , 8 (3), pp. 77-83, 2009. Role: Co-author
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SOCIETY AWARD

1	KOSMA Academic Excellence Award 2010 for excellence in academic achievement in PhD research. Award conferred on 26 June 2010. KOSMA stands for Koperasi Serbausaha Makmur Berhad, based in Kuantan Pahang and was conferred the best 5 cooperatives in Malaysia 2009 with a turnover of RM 100 million (2009).
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RESEARCH GRANTS

1	<u>APEX Grant (USM)</u> Grant Amount: RM 1.5 million Grant Reference Number : 1002/PFIZIK/910305 Duration: 1 year (02Jan2011 – 31Dec2011) Project Title: Prototype for Nano-UV Coating for Global UV Protection – the first of its kind (sub-project of Study and Development of Optoelectronics and Devices for Improved Performance and Sustainability) Role: Co-Researcher
2	<u>Incentive Grant (USM)</u> Grant Amount: RM 5,000 Grant Reference Number : 304/JPNP/600004 Duration: 1 year (04Jan2009 – 05Jan2010) Project Title: Optoelectronic Responses of ZnO and ZnO-metal Polymer Composites Role: Principal Investigator