

Faizal b. Mustapha
Department of Aerospace Engineering,
Faculty of Engineering,
University Putra Malaysia,
43400 Serdang, Selangor, Malaysia.
Telephone: 03-89466404
E-mail: faizal@eng.upm.edu.my

Areas of interest:

AIRCRAFT STRUCTURAL HEALTH MONITORING



#### **Academic Qualification:**

2006
DOCTOR OF PHILOSOPHY
UNIVERSITY OF SHEFFIELD, U.K (Aircraft Structural Health Monitoring)

1997
MSc AERONAUTICAL SYSTEM (Intellligent Machinery)
UNIVERSITY OF SALFORD, U.K

1995 B Eng (Hons) MECHANICAL ENGINEERING UNIVERSITY OF SALFORD, U.K

### **Area of Expertise**

**Damage Identification:** Damage detection in machinery and structures including smart structures i.e. Condition monitoring, Structural health monitoring. Experimental, Computational and Theoretical.

**Pattern Recognition:** Algorithms for damage identification including: Neural Networks, Statistical pattern recognition, Genetic Algorithm.

**Multivariate Statistics:** Algorithms for damage identification including: outlier analysis and Principal Component Analysis.

**Advanced Signal Processing:** Feature selection methods for damage identification and nonlinear system identification for time and frequency-domain analysis and wavelet analysis.

**Sensor Technology**: PZT sensor and tranducers devices for Structural Health Monitoring (SHM) applications and smart sensor for NDT technique.

**Advanced Material**: Hydbrid Composite, Composite Design and Testing, and Functionally Graded Material (FGM)

Professiona	I and Practical Experience	ie.
Date	Designation	Remarks
April 2011- Current	Associate Professor UPM	Department, Aerospace Engineering, Faculty of Engineering, UPM
Aug 2009- current	Head of Deaprtment <b>UPM</b>	Head of Department, Aerospace Engineering, Faculty of Engineering, UPM
Sept 1999 - 2011	Senior Lecturer / Researcher UPM	Designated, as a Senior Lecturer in the Aerospace Department, Faculty of Engineering, UPM. Teaching and undergoing research work are the priority areas besides doing the administrative, consultation and student project supervision. Appointed as a practical training co-ordinator and directly involved in providing and co-ordinating the students to proceed with the industrial training program. Responsible for setting-up laboratory and appointed as Material and Structure Co-ordinator. Responsible in purchasing laboratory equipments under ONE-OFF and development budget, responsible in preparing and analysing tender documents and other relevant purchasing processes. Appointed as a department project coordinator for the second phase of new Engineering Complex, in preparing the department laboratories layout.
June 2000 – July 2000	Acting Head of Department UPM	Appointed as acting Head of Aerospace department for the period of one-month.
Sept 99 – Oct 96	Research Officer SIRIM Berhad	Designated as Research Officer in Artificial Intelligent System Development Laboratory at SIRIM
	Mold Cost Estimation System (Phase I & II) SIRIM Berhad	Berhad. My work mainly involved in research and development projects, particularly in the software
	Intelligent MoldCost System (Phase III) IRPA	development project. Responsible for developing Mold Cost System (MCES). MCES is an expert system

	SIRIM Berhad	that assist mold designer and mold cost estimator to suggest the optimum mold cost based on its plastic part requirements. Responsible for setting-up the installation disc for the internal usage, graphical user interface development, engine production and enhancement, structuring database, promoting the software by conducting seminars and exhibitions and documented the development history
June 97- Oct 97	Project Leader SIRIM Berhad	and others related fields.  A small application of expert system.  This system will suggest the requested destination by the users (travellers).  Responsible for
	Tour Package expert system	developing the system, etc GUI, execution engine and documented the development and other related fields.
Jan 99 – June 99	Project Leader SIRIM Berhad	A system that will optimise the production operations by suggesting which machine or production should
	Job Shop Scheduling	be done first. Responsible for collecting data from the factory site (ITEM in Batu Caves), designing the structure of the system, and documented the development and other related fields.
Feb 99 – Jun 99	Project Leader SIRIM Berhad	Extended version of tour package expert system. Enhancement and adding new features to the system were included. Responsible for
	Holiday Advisor System	designing the structure of the new system.

# **Teaching Experiences**

Semester Code Courses

Kedua KAA 3402 – PENDORONGAN/ PROPULSION

1999/2000

Pertama KAA 3411-STATIK / STATIC

2000/2001

Pertama KAA 3504 – REKABENTUK SISTEM AEROANGKASA /

2000/2001 AEROSPACE SYSTEM DESIGN

Kedua 2000/2001	KAA 3502 – REKABENTUK PESAWAT/ AIRCRAFT DESIGN
Kedua 2000/2001	KAA 3711 – REKABENTUK & LUKISAN KEJURUTERAAN / DESIGN AND DRAWING ENGINEERING
Kedua 2000/2001	KAA 3908 – LATIHAN INDUSTRI / INDUSTRIAL TRAINING
Pertama 2001/2002	KAA 3504 – REKABENTUK SISTEM AEROANGKASA / AEROSPACE SYSTEM DESIGN
Pertama 2001/2002	KAA 3411 – STATIK / STATICS
Kedua 2001/2002	KAA 3502 – REKABENTUK PESAWAT / AIRCRAFT DESIGN
Kedua 2001/2002	KAA 3314- AMALI GETARAN DAN KAWALAN / VIBRATION AND CONTROL LAB
Kedua 2001/2002	KAA 3908 – LATIHAN INDUSTRI / INDUSTRIAL TRAINING
Pertama 2002/2003	KAA 3304-GETARAN / VIBRATION
Pertama 2002/2003	KAA 3312-GETARAN / VIBRATION
Pertama 2007/2008	KAA 3316 – AEROKEKENYALAN / AEROELASTICITY
Pertama 2007/2008	KAA 3908 – LATIHAN INDUSTRI / INDUSTRIAL TRAINING
Kedua 2006/2007	KAA 3516 – AMALI BAHAN DAN STRUKTUR / MATERIAL AND STRUCTURE LAB
Pertama 2007/2008	EAS 3401 – BAHAN AEROANGKASA DAN PROSES / AEROSPACE MATERIAL
Pertama 2007/2008	KAA 3403 – MEKANIK BAHAN/ MECHANICS OF MATERIALS
Pertama	KAA 3314 – AMALI GETARAN DAN KAWALAN / VIBRATION AND

2007/2008	CONTROL LAB
Kedua 2007/2008	EAS 3412 - STATIK DAN DINAMIK / STATICS AND DYNAMICS
Kedua 2007/2008	KAA 4204- PENGAJIAN INNOVASI II / INNOVASTION II
Pertama 2008/2009	EAS 3403 - MEKANIK BAHAN/ MECHANICS OF MATERIALS
Pertama 2008/2009	KAA 4201 – GLOBAL DESIGN I
Kedua 2008/2009	EAS 3412 - STATIK DAN DINAMIK / STATICS AND DYNAMICS
Kedua 2008/2009	KAA 4204- PENGAJIAN INNOVASI II / INNOVATION II
Pertama 2009/2010	KAA 4204 / EAS 4102- PENGAJIAN INNOVASI II / INNOVASTION II
Pertama 2009/2010	EAS 3403 - MEKANIK BAHAN/ MECHANICS OF MATERIALS
Kedua 2009/2010	EAS 3412 - STATIK DAN DINAMIK / STATICS AND DYNAMICS
Kedua 2009/2010	KAA 4204 / EAS 4102- PENGAJIAN INNOVASI II / INNOVATION II
Pertama 2010/2011	KAA 4204 / EAS 4102- PENGAJIAN INNOVASI II / INNOVASTION II

# Undergraduate and Postgraduate Supervision:

Pertama 2010/2011

Feb 11'	Nisreen N.Ali	PhD (Chairman) Structural Health Monitoring of a Real Bridge By Using Smart Sensor System.
Jun 10'	Mohammad Idris	PhD (Chairman) Model Scale Updating for Structural Health Monitoring

EAS 3403 - MEKANIK BAHAN/ MECHANICS OF MATERIALS

Nov 09'	Khairul Dahri	PhD (Chairman) Structural Health Monitoring for Composite Structure
Sept 08'	Ali Jahan	PhD (Chairman) Material Selection using MCDM <b>Graduated</b>
June 08'	Ali Shahrjedi	PhD (Chairman)Functionally Graded Material for aerospace applications. <b>Graduated</b>
Nov 07'	Siavash Talebi Taher	PhD (Committee Member) , Design,Testing and Optimisation of Composite Energy- AbsorbingStructure For Ground and Aerial Transportation Vehicles Graduated
Jan 10'	Abdullah Mohd Noor	MSc (Chairman) Damage Localization on Aircraft Panels Using Vibration Analysis.
Nov 09'	Ng Wei Sim	MSc (Chairman) Finite Element Analysis On Cohesive Element For Composite Fuselage Model. <b>Graduated</b>
Sept 07'	Mariana Mat Rani	MSc (Chairman) Detection and Localization of High and Low Velocity Impact Damage in Composite Laminates and Metallic Structure Via a Smart Sensors Notice of Submission
Sept 07'	Zuhir Ali Jassin	MSc (Chairman) Vibration Analysis for Cantilever Beam. <b>Graduated</b>
Nov 07'	Noraini Abu Wardi	MSc (Chairman) Soft Computing Platform for SHM using Novelty Techniques
Nov 07'	Yusri Dahdi	MSc (Chairman)New Hybrid Pipe Laminate for Industrial Applications. <b>Notice of Submission</b>
Nov 07'	Imran Bin Mohd Salleh	MSc (Committee member)3-D Modelling Approach Of (SHM) System for Ageing Aircraft Using

FINITE	ELEMENT	ANALYSIS
(ABAQU	S) And Genetic	Algorithms.

		(ADAQUS) And Genetic Algorithms.
Nov 07'	Amireza Fahim Golestaneh	MSc (Committee member)Simulation Of Fatigue Crack Propagation Of 2024T351 Aluminium Friction Stir Welding Graduated
Nov 07'		MSc (Committee
	Abdul Hannan Azmee	member)Postbuckling Analysis of Hybrid Laminated Composite Curved Panels
Nov 07'	Mugundan Subramaniam	MSc (Committee member)Lean Final Assembly of a Light Business Jet.
June 00'	M Suresh Devansan Jacob	MSc (Committee member) A prototype knowledge-based system in selecting material for automotive engine using KAPPA
Dec 99'	Dayang Laila Abg Abd Majid	MSc (Committee member) Subsonic Aeroelastic Analysis of a Thin Flat Plate <b>Graduated</b>
Nov 99'	Norzelawati Asmuin	MSc (Committee member) Development of elliptic and hyperbolic grid generation  Graduated
Nov 99'	Aznijar Ahmad Yazid	MSc (Committee member) Solution of Aerodynamic Problems using Meshless Method. <b>Graduated</b>
Jan 02	Delwin Teo Kok Fong Mohammad Yazdi Harmin	BEng, Application of RDS software on Subsonic Airplane
Jan 02	Nurhaiza M.Harith	BEng Development of web-based software for aircraft directory in Malaysia.
Jan 02	Rabiatul Nordin Sharifah Norhana	BEng Design and Fabricate Launching System for aircraft model
Jan 02	Law Sai Hou	BEng Case Study on Wing Structure
Jan 02	Lim Soo Yee Png Thian Ching	BEng Developing Programming Code for Take-off operation on subsonic airplane.
Jan 00	Zolpaka Ibrahim Kamarul Azhar	BEng, Case study on Fabrication Techniques of Fibre Reinforced

Jan 00	Thum Chuan Long	Plastic Material. BEng, Design of Small Press Operated by power screws.
Jan 00	Kumar Muniady	BEng, Design and Fabricate a wear testing machine.
Jan 01	Koh Kia Hong Chang Chee Weng Cheng Meng Hoon	BEng, Case study on design and fabricate Radio-controlled aircraft.
Jan 01	Mohd Azmee Razman Faizal	BEng, Case study on ECM and ECCM
Jan 01	Wan Zaqi Zachary Ainun Abd Majid	BEng, Prelimiary development on expert system assistant for fault diagnosis on aircraft engine
Jan 07'	Nurasyikin Mat Derus	BEng, Multivariate Techniques in Damage Detection on Aircraft Structures
Jan 09'	Wan Mohd Iftitah Wan Kamal	BEng, An experimental evaluation on a novel fabrication of a thermosoftening plastics composite structure under axial loading.

#### Research:

## 1. 2001-2002 (Principal Investigator)

A Prototype Expert System for Fault Diagnosis on Turbo-prop Engine Skim Penyelidikan Pensyarah Lantikan Baru, UPM.

RM 10,000

#### 2. 2001-2003 (Principal Investigator)

IJETSS: Intelligent Jet Engine Trouble Shooting System for Unit Udara Polis IRPA Geran (09-02-04-0543 EA001)

RM 148,000

## 3. 2008-2010 (Principal Investigator)

A Robust Structural Health Monitoring (SHM) system for aircraft parts and structures using Smart Material.

Sciencefund, MOSTI. Project no. 03-01-04-SF0807

RM 272,500

### 4. 2008-2009 (Principal Investigator)

A Fundamental Approach of Structural Health Monitoring Technique For Real **Engineering Components Using Novelty Indices** Fundamental Research Grant. Scheme, MOHE 07-10-07-398FR (5523398)

RM 96,000

# 5. 2008-2009 (Principal Investigator)

Model Based Structural Health Monitoring (SHM) for Ageing Aircraft and Real Engineering Structural Components using Finite Element Analysis and Optimisation Technique

**RUGS 51197 (UPM)** 

RM 44,000

### 6. 2010 -2012 (Principal Investigator)

Establishing unsupervised governing equations for Structural Health Monitoring (SHM), Fundamental Research Grant. Scheme, MOHE 02-10-10-926FR (5524003), **RM 46,400** 

#### 7. 2009-2011 (Member)

A Lamb Wave Statistical Analysis for Aircraft Structural Health Monitoring (SHM) system by using Piezoelectric Sensor on Composite Structure of Primary Control Surface, Sciencefund, MOSTI. Project no. SF00006, (UniKL, MIAT) RM 180,000

#### **8.** 2007-2009 (Member)

Hypervelocity Planar Plate Impact Experiments of Woven carbon-fibre reinforced matrix composite panels and/or composite laminates 91310

RM 70,000

#### **9.** 2007-2009 (Member)

Development of Combinatorial Optimisation for Cutting Tool Strategy 91187

RM 70,000

# Consultation:

Sept 09	Analysis of an Accelerated and Controlled Composting Pilot Plant, A Composter Unit.
July 09	Assessing Resonance Frequency for a Stiffener to Strenghten The Gyro Rack in Cargo Compartment In Aircraft (Eurocopter).
Apr 09	Bird Impact Test And Fatigue Test on F5 Canopy (MOF)
Oct 08	Evaluating Stress Distribution on a Spherical Vessel (Eco Builders)
Sept 08	In-flight vibration testing on a MARITIME helicopter for a Spectro-link assembly panel (Eurocopter).
Jun 08	Assessing Resonance Frequency for a Flat Plate Panel Mounting System on a MARITIME helicopter using Modal Testing Technique (Eurocopter).
Dec 07	Finite Element Analysis for Bus Structure
Dec 07	Wind Tunnel Testing For Street Lantern
Jan 06- July 06	European Project (ARTIMA) Aircraft Reliability Through Intelligent Materials Applications

#### **Publications:**

### **CITATION JOURNAL**

- S.M.Sapuan, M.S.D. Jacod, F.Mustapha and N.Ismail, A prototype knowledge based system of material selection for ceramic matrix composites of automotive engine components Journal of Material and Design, 2002. Vol 23 (8) pp.701-708 (ISI, Impact Factor 1.518)
- F.Mustapha, S.M.Sapuan and N.Ismail, A.S.Mokhtar, A computer based intelligent system for fault diagnosis of an aircraft engine, Engineering Computation: International Journal for Computer Aided Engineering Software,. Vol .21 (1), 2004 pp. 78-90(13) (ISI, Impact Factor 0.488)
- 3. **F.Mustapha**, G.Manson, S.G.Pierce, K.Worden, *Structural Health Monitoring of an annular components using Statistical Approach*, **International Journal of Strain Measurement**, **2005**, Vol. 41 (3) pp. 117-127 **(ISI, Impact Factor 0.642)**
- Daley Chetwynd, Faizal Mustapha, Jem Rongong and Keith Worden Damage Detection using an Active Constrained Layer Damping Treatment – a Preliminary Study Proceedings of the Third European Workshop on Structural Health Monitoring, (ISI) 2006, pp.300-307
- F.Mustapha, G.Manson, S.G.Pierce, K.Worden, Damage Detection Using Stress Waves and Multivariate Statistics: an Experimental Case Study of an Aircraft Component, International Journal of Strain Measurement, 2007. Vol: 43(1) pp: 47-53 (ISI, Impact Factor 0.642)
- 6. **F.Mustapha**, G.Manson, S.G.Pierce, K.Worden, *Damage location in an isotropic plate using a vector of novelty indices.* **Mechanical System and Signal Processing, 2007.** Vol: 21(4) pp: 1885-1906, **(ISI, Impact Factor 1.984)**
- 7. D. Chetwynd, K. Worden , **F. Mustapha**, J.A. Rongong, *Damage detection using Prior Wavelet Decompositions*, **Key Engineering Materials**, **2007** Damage Assessment of Structures VII Vol. 347 pp: 145-150 Published, **ISI**
- 8. D. Chetwynd, F. Mustapha, K. Worden, J.A. Rongong, S.G. Pierce, J.M. Dulieu-Barton, *Damage Localisation in a Stiffened Composite Panel*, International Journal of Strain Measurement, 2008. Vol. 44(4) pp: 298-307 (ISI, Impact Factor 0.642)
- R.Zahari, A.H.Azmee, F.Mustapha, M.S.Salit, R.Varatharajoo, A.Shakrine. Prediction of Progressive Failure in Woven Glass/Epoxy Composite Laminated Panels. Jurnal Mekanikal, No 25, 80-91, 2008
- 10. A. F. Golestaneh ,Aidy Ali, S. V. Wong., **F. Mustapha**, Mehdi Zadeh Mohammad Simulation of Fatigue Crack Growth in Friction Stir Welded Joints in 2024-T351 AL

- Alloy. 2008, Suranaree Journal of Science Technology Vol (15), Issue (4): pp:271-285 (Scopus).
- 11. A. F. Golestaneh, Aidy Ali, S. V. Wong., F. Mustapha. Computational investigations of crack behavior in friction stir welding. Simulation: Transactions of The Society for Modeling and Simulation International 2009 (CompuMath Citation Index). Volume 85, Number 1, pp: 45-59 (ISI, Impact Factor 0.783)
- 12. S.Taher, R.Zahari, S.Ataollah, **F.Mustapha**, S.Basri. *A Double –cell foam-filled composite block for efficient energy absorption under axial compression*, **Composite Structures**, **2009**, Vol 89 (3), pp 399-407 **(ISI ,Impact Factor 2.06)**
- 13. Esfahani, A.Shahrjedi, A.Farshidianfar, **F.Mustapha**, *Longitudinal Vibrations Analysis of Vehicular Clutch*, **Australian Journal of Basic and Applied Sciences**, **2009**, Vol 3(4) pp:3633-3641 (**Scopus**)
- 14. ShahNor Basri, M. M. Fakir, F. Mustapha, D. L. A. Majid, A. A. Jaafar, Heat Distribution in Rectangular Fins Using Efficient Finite Element and Differential Quadrature Methods, Engineering, 2009, Vol.1, pp:151-160, (Scopus)
- 15. A.Shahjedi, M.Bayat, F.Mustapha, S.M.Sapuan and R.Zahari, Free Vibration Analysis of Functionally Graded Quadrangle Plates Using Second Order Shear Deformation Theory, Australian Journal of Basic and Applied Sciences, Vol 4 (5): pp 893-905 2009, (Scopus)
- 16. A. Jahan, M.Y.Ismail, S.M.Sapuan, F. Mustapha. Material Screening and Choosing Methods – A review: Journal of Material and Design. 2010 Vol:31(2) pp: 696-705 (ISI, Impact Factor 1.518)
- 17. M.M.Shahzamanian, B.B.Sahari, M.Bayat, **F.Mustapha**, Z.N.Ismarrubie, Finite Element Analysis of Thermoelastic contact problem in functionally graded axisymmetric brake disks. **Composite Structures**, Vol.92 (7), 1591-1602, 2010. **(ISI, Impact Factor 2.06)**
- 18. S. Taher, A.A. Oshkour, R. Zahari, **F. Mustapha**, S. Basri. On the Cruch Behaviour of an Ultra Light Multi-Cell Foam-Filled Composite Structure under axial compression, **Journal of Reinforced Plastics and Composite Structures**, Vol 29, No.3 391-407, 2010. **(ISI, Impact Factor 0.4)**
- 19. A. Jahan, M.Y.Ismail, **F. Mustapha,** S.M.Sapuan. *Material Selection based on ordinal data,* **Journal of Material and Design. 2010,** Vol: 31(7) pp: 3180-3187 **(ISI, Factor 1.518)**
- 20. A. Shahrjerdi, M. Bayat, **F. Mustapha**, S. M. Sapuan, R. Zahari, *Stress Analysis a Functionally Graded Quadrangle Plate Using Second Order Shear Deformation*

- Theory, International Review of Mechanical Engineering ,2010, Vol 4, No.1, pp 92, (Scopus)
- 21. D.L.A.Majid, R. Zahari and F. Mustapha, Vibration Analysis of an Aluminum Instrument Panel Board: Ground and In-Flight Test, International Review of Aerospace Engineering (2010), Vol 2, No.6, pp 315 (Scopus)
- 22. F.Mustapha, Z.Noh, N.Ismail, S.M.Sapuan and, A.S.Mokhtar, *Development of a prototype knowledgebases system for troubleshooting of aircraft and engine parts.*, International Journal of Mechanical and Material Engineering. 2010 (Scopus)
- 23. L.H.Abbud, A.R.A.Talib, **F.Mustapha**, H.Tawfique and F.A.Najim, *Behaviour of Transparent Material under High Velocity Impact*, **International Journal of Mechanical and Material Engineering. Vol (5) 2010 (Scopus).**
- 24. N.Yidris, R. Zahari, D.L. Majid, **F.Mustapha**, M.T.H.Sultan and A.S.M.Rafie, *Crush Simulation of Woven C-Glass/Epoxy Unmanned Aerial Vehicle Fuselage Section,* International Journal of Mechanical and Material Engineering. Vol (5) 2010 (Scopus).
- 25. M.Nurhaniza, M.K.A.Ariffin, Aidy Ali, **F.Mustapha**, and A.W.Noraini, *Finite element Analysis of composite materials for aerospace applications*, **IOP Conf: Materials Science and Engineering** 11 (2010) **(Scopus)**
- 26. A. Shahrjerdi, M. Bayat, **F. Mustapha**, S. M. Sapuan, R. Zahari, *Second Order Shear Deformation Theory to Analyze Fundamental Frequency for Solar Functionally Graded Plates*, **Mechanics Based Design Of Structures And Machines An International Journal.** 38 (3), pp. 348-361 (2010) **(ISI Impact Factor 0.552)**
- 27. F.Mustapha ,M.Mustapha, K.Noorsal, O.Mamat, P.Hussain, F.Ahmad, N.Muhammad, S.M.Harris, *Preliminary Study on the Fabrication of Aluminium Foam Through Pressure Assisted Sintering Dissolution Process, Journal of Materials Processing Technology.* Vol 210 (12), pp1598 1612, **2010 (ISI Impact Factor 1.42 )**
- 28. M.Mustapha, **F.Mustapha**, O.Mamat, and P.Hussain, Fabrication of Aluminium Foam Through Pressure Assisted High Frequency Induction Heated Sintering Dissolution Process: An experimental observation, **Journal of Powder Metallurgy**, **2010** (Accepted in Press, ISI Impact Factor **0.37**)
- 29.M.M. Shahzamanian, B.B. Sahari, M. Bayat, Z.N. Ismarrubie, and **F. Mustapha,** *Transient and Thermal Contact Analysis for the Elastic Behaviour Functionally Graded Brake Disks Due to Mechanical and Thermal Loads*, **Journal of Material and Design.**31 (10), pp. 4655-4665 **2010 (ISI Impact Factor 1.518)**

- 30.H.K.Alsultaney, M.K.A. Ariffin, B.T.H.T. Baharudin, Aidy Ali, F. Mustapha. Development of combinatorial optimisation for cutting tool path strategy. Pertanika Journal of Science and technology. Vol 19(2) 2011 (Scopus).
- 31. A. Shahrjerdi, **F. Mustapha**, M. Bayat, S.M. Sapuan, R. Zahari and M.M. Shahzamanian, *Natural Frequency of FG Rectangular Plate by Shear Deformation Theory* **IOP Conf: Materials Science and Engineering** 17 (1) (2011) **(Scopus)**
- 32. A. Jahan, F. Mustapha, M.Y.Ismail, , S.M.Sapuan, M.Bahraminasab. *A comprehensive VIKOR method for material selection*, **Journal of Material and Design. 2011**, Vol: 32 pp: 1215 -1221 (ISI, Impact Factor 1.518)
- 33. R. Varatharajoo, **F. Mustapha**, D.L.A. Abdul Majid, R. Zahari and R. Kahle *Critical Speeds for Carbon/Epoxy Composite Rotors in Spacecraft Energy* **Key Engineering Materials, 2011** Composite Science and Technology Vol. 471-472 pp: 37-43. Published, **ISI**
- 34. A. Shahrjerdi, **F. Mustapha**, S.M. Sapuan, M. Bayat, D.L.A. Abdul Majid and R. Zahari, *Thermal Free Vibration Analysis of Temperature-Dependent Functionally Graded Plates Using Second Order Shear Deformation* **Key Engineering Materials, 2011** Composite Science and Technology Vol. 471-472 pp:133-140. Published, ISI
- 35. A. Shahrjerdi, **F. Mustapha**, S.M. Sapuan, M. Bayat, D.L.A. Abdul Majid and R. Zahari, *Optimal Sintering Procedure to Fabrication of Functionally Graded Hydroxyapatite-Titanium* **Key Engineering Materials, 2011** Composite Science and Technology Vol. 471-472 pp:140-144. Published, **ISI**
- 36.Z.A. Rasid, A. Ayob, R. Zahari, **F. Mustapha**, D.L. Majid and R. Varatharajoo, Buckling and Post-Buckling Improvements of Laminated Composite Plates Using Finite Element Method, **Key Engineering Materials**, **2011** Composite Science and Technology Vol. 471-472 pp:530-535. Published, **ISI**
- 37.M.Y. Haris, D. Laila, E.S. Zainudin, **F. Mustapha**, R. Zahari and Z. Halim, *Preliminary Review of Biocomposites Materials for Aircraft Radome Application*, **Key Engineering Materials, 2011** Composite Science and Technology, Vol. 471-472,pp:563-567. Published, **ISI.**
- 38. N.B. Affandi, A.S.M. Rafie, S. Basri, F.I. Romli, D.L.A. Abdul Majid and **F. Mustapha**, *A Preliminary Study on Translational Kinetic Energy Absorption Using Coconut-Fiber (Coir) Sheets as a Potential Impact-Worthy Constituent in Advanced Aerospace Material*, **Key Engineering Materials, 2011** Composite Science and Technology, Vol. 471-472,pp:1028-1033. Published, **ISI.**
- 39. N.W. Sim, **F. Mustapha**, R. Varatharajoo, R. Zahari and D.L. Majid, *Parametric Study on Cohesive Element for Composite Fuselage Model*, **Key Engineering Materials**, **2011** Composite Science and Technology, Vol. 471-472,pp:1085-1090. Published, **ISI.**

- 40. K.D. Mohd Aris, **F. Mustapha**, S.M. Sapuan and D.L.A. Abdul Majid, *A Structural Health Monitoring of a Pitch Catch Active Sensing of PZT Sensor on Normal, Damage and Repair Aircraft Spoiler*, **Key Engineering Materials, 2011** Composite Science and Technology, Vol. 471-472,pp:1124-11129. Published, **ISI.**
- 41. A.Norozi, M.K.A.Ariffin, N.Ismail, **F.Mustapha**, *A hybrid GA-SA algorithm for multi-objective scheduling problem in high-product mix shop-floor*, **Scientific Research and Essays**, Accepted in Press (**ISI Impact Factor 0.4**)
- 42. Jahan, A., Mustapha, F., Ismail, M.Y., Sapuan, S.M., Bahraminasab, M. A framework for weighting of criteria in ranking stage of material selection process. Under review in the International Journal of Advanced Manufacturing Technology (IF=1.128).
- 43. A. Shahrjerdi, **F. Mustapha**, M. Bayat, S.M. Sapuan, D.L.A. Abdul Majid *Fabrication* of Functionally Graded Hydroxyapatite-Titanium by optimal sintering **International Journal of Physical Science**, **2011** Accepted, **(IF = 0.55)**
- 44. A. Shahrjerdi, F. Mustapha, M. Bayat, S. M. Sapuan and D.L.A. Majid; Free Vibration Analysis of Solar Functionally Graded Plates with Temperature-dependent Material Properties Using Second Order Shear Deformation Theory, Journal of Mechanical Science and Technology, Springer, 2011, Accepted in Press. (IF=0.4).
- 45. F. Mustapha, N.W. Sim, and A.Shahrjerdi; FEA Modeling on Adhesive Joint for Composite Fuselage Model, International Journal of Physical Sciences, 2011, Accepted, in press,. (IF= 0.55)
- 46. F. Mustapha, N.W. Sim, A.Shahrjerdi; Parametric study on cohesive element for Composite Fuselage Model, Journal Of Theoretical And Applied Mechanics, ISI with impact factor, in process)
- 47. F. Mustapha, N.W. Sim, A.Shahrjerdi; Finite Element Validation on Adhesive Joint for Composite Fuselage Model, Journal of the (Brazilian Society of Mechanical Sciences and Engineering, ISI with impact factor, in process).
- 48. A.R.A.Talib, L.H.Abbud, A.Ali , **F.Mustapha**, *Mechanical properties of interlaminer Kevlar29 and Al2O3 powder/epoxy composite plates using an analytical approach,* **Scientific Research and Essays**, Vol. 6(21), pp. 4455-4463 2011 (**ISI Impact Factor 0.4**)
- 49. Reza Shahrjerdi, Mohd Khairol Anuar, **F. Mustapha**, N. Ismail and M. Esmaeili, *An integrated inventory models under cooperative and non-cooperative seller-buyer and vendor supply chain*, **Scientific Research and Essays**, Vol. 6(8), pp. 1720-1731, 2011 (**ISI Impact Factor 0.4**)

- 50. Mohamad, N., Ariffin, M.K.A., Ali, A., **Mustapha, F.,** *Deflection Analysis of The Thin-Web Workpiece Structure Using Similarity Concept*, (2011) Advanced Materials Research, Volume 337, Pages 479-488
- 51. Abu Talib, A.R., Abbud, L.H., **Mustapha, F.**, *Ballistic Impact Performance of Kevlar-* 29 and Al2O3 Powder/Epoxy Targets Under High Velocity Impact, Materials and Design, Volume 35, Issue 1, Pages 12-19
- 52.M.T.H. Sultan, S. Basri, A.S.M. Rafie, **F. Mustapha**, D.L. Majid, M.R. Ajir, *High Velocity Impact Damage Analysis for Glass Epoxy Laminated Plates*, (2011) Advanced Materials Research, Volume 399-401, Pages 2318-2328

#### **BOOK CHAPTERS.**

- 53. F. Mustapha, S.M. Sapuan, K.Worden, and G.Manson, Damage Identification and Localization of Carbon Fiber-Reinforced Plastic Composite Plate Using Outlier Analysis and Multilayer Perceptron Neural Network: Composite Material Technology, Taylor and Francis, 20101(79-113), (ISBN 978-1-4200-9322-2)
- 54. F. Mustapha, S.M. Sapuan, K.Worden, and G.Manson, Damage Localization of Carbon Fiber-Reinforced Plastic Composite and Perspex Plates Using Novelty Indices and the Cross-Validation Set Of Multilayer Perceptron Neural Network: Composite Material Technology, Taylor and Francis, 2010 (115- 133) (ISBN 978-1-4200-9322-2)
- 55. **F. Mustapha** and A.Shahrjerdi, Second Order Shear Deformation Theory (SSDT) for Free Vibration Analysis on a Functionally Graded Quadrangle Plates. *In Tech Publisher Vibration Analysis*, 2011 (ISBN 978-953-308-64-8).

#### NON-CITATION JOURNAL and CONFERENCE PROCEEDINGS

- 56. F.Mustapha Preliminary development of a prototype Expert System for fault diagnosis on Aircraft Engine (National Conference on Aerodynamics and related topics, USM,2001).
- 57. Dayang Laila Majid, ShahNor Basri, Waqar Asrar and Faizal Mustapha A Computational Subsonic Aeroelastic Analysis of A Thin Flat Plate (National Conference on Aerodynamics and related topics, USM, 2001)
- 58. **F.Mustapha**, A.A.Omar and A.A.Yazid *Aerodynamics Analysis of ZODIACH CH* 601 using RDS-Software. The Second World Engineering Congress Sarawak 2002.
- 59. Dayang Laila Majid, ShahNor Basri, Waqar Asrar and **Faizal Mustapha** Subsonic Aeroelastic Analysis of A Thin Flat Plat **The Institution Of Engineer, Malaysia Journal 2002.**

- 60. D. Chetwynd, **F. Mustapha**, K. Worden, J.A. Rongong *Damage Location in a Stiffened Composite Panel using Lamb Waves and Neural Networks*, **IMAC XXV**, Orlando , USA 2007.
- 61. D. Chetwynd, K. Worden, **F. Mustapha**, J.A. Rongong *Damage Detection Using Prior Wavelet Decompositions* Seventh International Conference On Damage Assessment of Structures **DAMAS 2007**, Torino, Italy 2007
- 62. Zahari, R., **Mustapha, F** and El-Zafrany, A Progressive Failure Analysis Of Composite Laminated Trapezoidal Plates Using The Finite Strip Method **Aerotech Il-2007**.
- 63. I.Salleh, M.Rani, M.K.A Arrifin "3-D Modelling Approach of SHM system for Ageing Aircraft Using FEA and Genetic Algorithm, South East Asia, Abaqus Regional Users' Conference 2007.
- 64. Siavash T.Taher, R.Zahari, **F.Mustapha**, S. Ataollahi, S.Basri, and AA.Oshkour "On the crush behavior of an Ultra Light Multi-Cell Foam-filled Composite Structures For Energy Absorption: Part-I-Experimental, **Composite Conference**, **SIRIM**, **2008**.
- 65. Siavash T.Taher, R.Zahari, **F.Mustapha**, S. Ataollahi, S.Basri, and AA.Oshkour "On the crush behavior of an Ultra Light Multi-Cell Foam-filled Composite Structures For Energy Absorption: Part-II-Numerical Simulation, **Composite Conference, SIRIM, 2008**.
- 66. Mohd Aris, K. D and **F.Mustapha** An Experimental Analysis Of Various Sizes Of Delaminated GRP, International Conference on Engineering Technology, Kuala Lumpur, **2009**
- 67. Y.Dahdi, I.Edi, F.Mustapha, R.Zahari, *Novel Fabrication Technique for Tubular and Frusto-Conical Composite Products for Aerospace Applications*. **Proceedings of AEROTECH III**, Kuala Lumpur **2009**.
- 68. Ali Shahrjerdi, **F. Mustapha**, M. Bayat, S.M. Sapuan, R. Zahari and M.M Shahzamanian *Natural Frequency of F.G. Rectangular Plate, International Advanced of Technology Congress (ATCi),PWTC, Malaysia. November 3-5, 2009*
- 69. Zuhir A.Jassim, Nawal Aswan Abdul Jalil and **F.Mustapha** *Crack detection of a Cantilever Solid Rod Using Numerical Evaluation,* 3<sup>rd</sup> Regional Conference in Noise, Vibration and Comfort, Putrajaya **2010**
- 70. Mohd Aris, K. D, N.Z.M.Zuhdi and **F.Mustapha** The behavior of Repaired Carbon Fibre Reinforced Plastics (CFRP) of an Aircraft Structure Panel Under Tensile Load, 7<sup>th</sup> International Materials on Technology Conference, Kuching, Sarawak **2010**

- 71. Mohd Aris, K. D and **F.Mustapha** and S.M.Sapuan, *Preliminary Study on the Usage of Smart PZT sensors in Aircraft Structural Health Monitoring System (SHMS)*National Conference on Engineering, UNiKL (2010)
- 72. Ali Shahrjerdi, **F. Mustapha**, R. Zahari, M. Bayat, SH.Hosseini, A.Nezamabadi, and M.M Shahzamanian *Displacement Magnitude Of A Functionally Graded Square Plate Using Shear Deformation Theory, World Engineering Congress* **2010**
- 73. Jahan A, **Mustapha F**, Ismail MY, Sapuan SM. Material selection in biomedical applications: Comparing the comprehensive VIKOR and goal programming approach. *Abstract accepted in the 21st International Conference on Multiple Criteria Decision Making. Jyväskylä, Finland 2011*
- 74. Varatharajoo, R., **Mustapha, F.**, Majid, D.L.A.A., Zahari, R., Kahle, R., 2011, *Critical Speeds for Carbon/Epoxy Composite Rotors in Spacecraft Energy Storage Applications*, 8th International Conference on Composite Science and Technology, ICCST8; Code 84301, Kuala Lumpur, Malaysia.
- 75. Shahrjerdi, A., **Mustapha, F.**, Sapuan, S.M., Bayat, M., Majid, D.L.A., Zahari, R., 2011, *Thermal Free Vibration Analysis of Temperature-Dependent Functionally Graded Plates Using Second Order Shear Deformation*, 8th International Conference on Composite Science and Technology, ICCST8; Code 84301, Kuala Lumpur, Malaysia.
- 76. Shahrjerdi, A., **Mustapha, F.**, Sapuan, S.M., Bayat, M., Majid, D.L.A., Zahari, R., 2011, *Optimal Sintering Procedure to Fabrication of Functionally Graded Hydroxyapatite-Titanium*, 8th International Conference on Composite Science and Technology, ICCST8; Code 84301, Kuala Lumpur, Malaysia.
- 77. Rasid, Z.A., Ayob, A., Zahari, R., **Mustapha, F.**, Majid, D.L., Varatharajoo, R., 2011, *Buckling and Post-Buckling Improvements of Laminated Composite Plates Using Finite Element Method*, 8th International Conference on Composite Science and Technology, ICCST8; Code 84301, Kuala Lumpur, Malaysia.
- 78. Haris, M.Y., Laila, D., Zainudin, E.S., **Mustapha, F.,** Zahari, R., Halim, Z., 2011, *Preliminary Review of Biocomposites Materials for Aircraft Radome Application*, 8th International Conference on Composite Science and Technology, ICCST8; Code 84301, Kuala Lumpur, Malaysia.
- 79. Affandi, N.B., Rafie, A.S.Mohd., Basri, S., Romli, F.I., Majid, D.L.A.A., **Mustapha, F.,** 2011, *A preliminary Study on Translational Kinetic Energy Absorption Using Coconut-Fiber (Coir) Sheets as a Potential Impact-Worthy Constituent in Advanced Aerospace Material,* 8th International Conference on Composite Science and Technology, ICCST8; Code 84301, Kuala Lumpur, Malaysia.

- 80. Sim, N.W., **Mustapha, F.**, Varatharajoo, R., Zahari, R., Majid, D.L., 2011, *Parametric Study on Cohesive Element for Composite Fuselage Model*, 8th International Conference on Composite Science and Technology, ICCST8; Code 84301, Kuala Lumpur, Malaysia.
- 81. Mohd Aris, K.D., **Mustapha, F.**, Sapuan, S.M., Majid, D.L., 2011, A Structural Health Monitoring of a Pitch Catch Active Sensing of PZT Sensor on Normal, Damage and Repair Aircraft Spoiler, 8th International Conference on Composite Science and Technology, ICCST8; Code 84301, Kuala Lumpur, Malaysia.
- 82. Mohamad, N., Ariffin, M.K.A., Ali, A., **Mustapha, F.**, 2011, *Deflection Analysis of The Thin-Web Workpiece Structure Using Similarity Concept*, 2011 International Conference on Materials and Products Manufacturing Technology, ICMPMT 2011; Code 86737, Chengdu, China.
- 83. Sultan, M.T.H., Rafie, A.S.M., **Mustapha, F.**, Majid, D.L., M.R. Ajir, 2011, *Impact Damage Detection and Qualification for CFRP Laminates Subjected to Low Velocity Impact Damages-A NDT Approach*, Malaysian International NDT Conference and Exhibition 2011, Kuala Lumpur, Malaysia.
- 84. Nurhaniza Mohamad , M.K.A. Ariffin, Aidy Ali, **F. Mustapha**, *Simulation Analysis For Thin-Web Structures Using Finite Element Analysis (FEA)* Regional Symposium on Engineering and Technology 2011 Kuching, Sarawak, Malaysia, 21-23 November 2011

Awards:

1. From : Universiti Putra Malaysia

Title : Anugerah Perkhidmatan Cemerlang, 2002

Level : University

2. From : University of Sheffield, UK, 2006

Title : Visiting Scholar linked to Department of Mechanical Engineering at the

University of Sheffield.

Level : International

3. From : Biritish Society for Strain Measurement

Title : Strain Best Technical Note Prize 2007.

Level : International

4. From : Universiti Putra Malaysia

Title : Anugerah Perkhidmatan Cemerlang, 2007

Level : University

5. From : Universiti Putra Malaysia Title : Silver Medal PRPI 08

Level : University

6. From : Biritish Society for Strain Measurement

Title : Best Paper 2008 Level : International

7. From : Universiti Putra Malaysia

Title : Silver and Bronze Medals PRPI 10

Level : University

8. From : University of California, San Diego, USA, 2010

Title : Visiting Research Scholar linked to Department of Structural Engineering

at the University of California, San Diego, USA.

Level : International

## Administratives Responsibilities:

1. Year: 2000-2001 Title: ISO 9001

Responsibilities: Chairman for Aerospace Department.

2. Year: 2007 – 2009

3. Title: Research Area (Material and Aerospace Structure), Aerospace Department.

4. Responsibilities: Head

5. Year: 2007 – 2009

Title: Lab Coordinator (Aerospace Structure), Aerospace Department.

Responsibilities: Head

6. Year: 2007 – 2009

Title: Coordinator for Facult Development Aerospace Department.

Responsibilities: Coordinator

7. Year: 2007 – 2009

Title: Jawatankuasa Keselamatan dan Kesihatan Pekerjaan, Fakulti Kejuruteraan

Responsibilities: AJK

8. Year: 2009 - current

Title: Aerospace Department

Responsibilities: Head of Department

# **Professional Experiences:**

1. Year: 1998 – current

Title: Board of Engineer (BEM) Malaysia ResponsibilitiesGraduate Member

2. Year: 2005 – current Title: Institute of Physics

Responsibilities: Affliate Member

3. Year: 2006

Title: National Symposium: Aerospace Technologies (AEROTECH II),

Putrajaya, Malaysia. Responsibilities: Member

4. Year: 2006

Title: Research Collaborator UPM and Afyon Kocatepe University

Responsibilities: Ahli

5. Year: 2007

Title: Brain Gain Malaysia Program, Akademi Sains Malaysia

Responsibilities: Member

6. Year: 2007

Title: Majlis Industri Pertahanan (Aeroangkasa)

Responsibilities: Member

7. Year: 2008 -current

Title: Malaysian Qualifications Agency (MQA)

Responsibilities: Panel for Aerospace Engineering Division for:-

- i) Diploma in Aircraft Maintenance (Composite), UniKL, MIAT
- ii) Diploma in Aircraft Maintenance (Avionics), UniKL, MIAT
- iii) Bachelor of Technology of Airpalne Engineering (Avionics), UniKL, MIAT
- iv) Diploma in Aviation Management, Kolej Professional dan Pengurusan ,KLIA
- v) Diploma in Aviation (Air Traffic Management), Akademik Latihan Penerbangan Asia Pasifik, Kota Bahru
- vi) Bachelor of Technology in Aeonautical (Air Traffic Controller), UTHM

8. Year: 2009

Title: National Symposium: Aerospace Technologies (AEROTECH III),

Putrajaya, Malaysia

Responsibilities: Secretary

9. Year: 2009 – current

Title: Majlis Jemaah Dekan Aeroangkasa MOHE

Responsibilities: Member

10. Year: 2010

Title: Invention & Innovation Awards 2010 (MARS)

Responsibilities: Panel Judge

11. Year: 2011

Title: Malaysia Technology Exhibition 2011 (MTE 2011)

Responsibilities: Panel Judge

12. Year: 2011

Title: International Conference of Composite Technology 8 (ICCST 8' 2011)

Responsibilities: Co-Chairman

13. Year: 2011

Title: Journal of Surface Engineered Materials and Advanced Technology

Responsibilities: Editorial Board Member

14. Year 2011

Title: IKBN Temerloh

Responsibilities: Panel for Diploma for IKBN Temerloh

15. Year 2011

Title: International Conference on Engineering and Applied Sciences 2012

Responsibilities: Conference Committee.

# Thesis Examiner:

	Name of Student	Examination	Appointment	Year
1.	Azmin Shakrine	PhD Thesis Examiner	Internal - UPM	2007
2.	Kong Hong Shim	Masters Thesis Examiner	Internal - UPM	2008
3.	Nadia Abdullah	Masters Thesis Examiner	Internal - UPM	2008
4.	Alireza Noroziroshan	Masters Thesis Examiner	Internal - UPM	2009
5.	Siti Zulaika Razali	Masters Thesis Examiner	Internal - UPM	2009
6.	Zuhair H.Obeid Abdulla	Masters Thesis Examiner	External -UNITEN	2010
7.	Akeel Shebeeb Kherbeet	Masters Thesis Examiner	External -UNITEN	2010
8.	Mohammad Mehdi Salehi Dezfouli	Masters Thesis Examiner	Internal - UPM	2010
9.	Teuku Edishah Putra	Masters Thesis Examiner	External -UKM	2010
10.	Alexander Chee Hon Cheong	Masters Without Thesis Examiner	Internal - UPM	2010
11.	Mazlan Ahmad Mansor	Masters Without Thesis	Internal - UPM	2010
12.	NurulAsikin Mohd Suhadis	Examiner PhD Thesis Examiner	Internal - UPM	2011
13.	Behzad Bahraminejad	PhD Thesis Examiner	Internal - UPM	2011
14.	Fatai Bukola Akande	PhD Thesis Examiner	Internal - UPM	2011
13.	Mohdammad Mehdi Salehi Dezfouli	Masters Thesis Examiner	Internal - UPM	2011
14.	Mohammad Darahim Ibrahim	Masters Thesis Examiner	External - UKM	2011
15.	Nur Saaidah Abu Bakar	Masters Thesis Examiner	External - UTeM	2011
16.	Syed Najib Sahabuddin	Masters Thesis Examiner	External - UIA	2011

# Article Reviewer:

	Title	Role	Level	Year
1.	Journal of Material and Design Stress Corrosion Cracking Behaviour of X120 Pipeline Steel in a Simulated Acidic Soil Solution	Journal Reviewer	International	2011
2.	Composite Structures Dynamic response of functionally graded plates under moving heat source Composite Structures	Journal Reviewer	International	2011
3.	Journal of Material and Design: Knowledge Based Model for Polymer Composite Design and Production.	Journal Reviewer	International	2011
4.	The International Journal of Computational methods in Engineering and Sciences: Weight and Copper Loss Optimization In Radial Magnetic Bearing: GA Approach	Journal Reviewer	International	2011
5.	Journal of Material and Design: Ballistic Impact Performance of metallic targets	Journal Reviewer	International	2011
6.	Journal of Material and Design: Failure pressure of composite cyclinders with plastic liner	Journal Reviewer	International	2010
7.	Journal of Material and Design: Effect of Tapioca Starch on Cotton/Albumen Bio-Composites	Journal Reviewer	International	2010
8.	Journal of Material and Design: Role of Residual stresses induced by industrial fabrication on stress corrosion cracking susceptibility of austenitic stainless steel.	Journal Reviewer	International	2010

9.	Journal of Material and Design: Experimental characterization and modelization of the relaxation and complex moduli of a adhesive	Journal Reviewer	International	2010
10.	The International Journal of Computational methods in Engineering and Sciences: An Optimal Design Methodology of Tapered Roller Bearings Using Genetic Algorithm	Journal Reviewer	International	2010
11.	The International Journal of Computational methods: A nonlinear functionally graded column element	Journal Reviewer	International	2010
12.	WEC 2010: Motorcycle Crash Test Center: A Movable Barrier Approach	Journal Reviewer	National	2010
13.	WEC 2010: Post Impact Tensile Strength of Kenaf-PP-Kevlar and Notch Strength of Hybrid Composite	Journal Reviewer	National	2010
14.	WEC 2010: Whole Body Vibration (WBV) On Malaysian Armed Forces (MAF) Vehicles	Journal Reviewer	National	2010
15.	NVC 2010: Application of I-kaz Method to Generate New Input Signal	Journal Reviewer	National	2010
16.	NVC 2010: The contribution of moment excitation on the uncertainty in the vibration input power	Journal Reviewer	National	2010
17.	Aerotech III: Identification of Impact Damage in CFRP Laminates Using the NDT Approach	Journal Reviewer	National	2009

18. Aerotech III: Delamination Phenomena for Airframe Composite Structure

Journal Reviewer National

2009

# **Product Patent / Industrial Design**

Title of Invention	Role	Type of Intellectual Property Rights	Registration No.	Year
Compression Testing Rig for Composite Buckling Under Delamination at Sub- Laminate Layer	Leader	Industrial Design Protection	15-99 (10- 01376-0101)	2010

# **Invited Speaker**

Conference on Non-Destructive Testing For The Aviation Industry, Hong Kong, 2010

Invited Speaker Aircraft Structural Health Monitoring

EPS Montreal International Conference on Advanced Materials and Processing 2011, Montreal , Quebec

Invited Speaker Preliminary study on the fabrication of aluminium foam