

# Dr. Gayan Aravinda Abeygunawardane,

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## **Profile**

PhD in Mechanical Engineering specialized in Mechanics of Advanced Materials with the expertise of computational analysis of material behavior (Mechanical / Chemical and Thermal) with the use of complex material models and nonlinear finite element analysis (FEA), Computational Fluid Dynamics, based on commercial and user-defined computer codes. More than six years' experience in the university academia. Experienced in Semiconductor Industry as an R/D and Design Engineer. Highly experienced with structural integrity analysis with materials characterization/testing (Mechanical / Chemical and Thermal). Looking for a new challenging opportunity in academia.

## **Areas of Expertise**

Mechanics of Materials, Structural Integrity, Linear and Non-Linear Finite Element Analysis (Softwares – ABAQUS (with user defined subroutines using FORTRAN) /MSC Marc (with user defined subroutines)/ COMSOL Multiphysics), Material Characterization, Machine Design, Python 3.8 with affiliated packages (Digital Image Processing and Neural Networks, Numpy, Scipy, skimage etc), Pneumatics, PLC Ladder Programming, Ability to use High Performance Computers, Numerical Optimization Packages – MCalibration.

## **Professional Experience**

**Senior Lecturer**

**2018 Aug to Present**

**Dept. of Materials Science and Engineering,  
University of Moratuwa, Sri Lanka.**

### **A. Teaching Duties**

- Designed and delivered lectures (in F2F and Online setting), seminars, tutorials for “Polymer Process Control and Instrumentation”.
- Designed and delivered lectures (in F2F and Online setting), seminars, tutorials for “Fundamentals of Machine Element Design”.
- Designed and delivered lectures (in F2F and Online setting), tutorials for “Mechanical Behavior of Materials”.
- Designed and delivered lectures (in F2F and Online setting), tutorials for “Aircraft Materials and Manufacturing”.

- Designed and marked assessments and delivered quality feedback for the above modules.

## B. Research Activities

- **Senate Research Short Term Grant – UoM – (SRC/ST/2018/34)** – 2019 for project – "Molecular insight on the mechanical properties of metallic glasses for bio medical applications"
- **Senate Research Long Term Grant – UoM – (SRC/LT/2019/11)** – 2019 – for project – "Characterization and Modelling of Thermo Mechanical Behavior of Solid Tires with Graphite as Heat Transfer Enhancer" in collaboration with Stellana (Elastomeric) pvt. Ltd.
- **Senate Research Short Term Grant – UoM – (SRC/ST/2021/07)** – 2021 – for project – "Design and fabrication of bi-axial tensile testing machine to characterize graphic particle based tie compounds"
- **Senate Research Long Term Grant – UoM – (SRC/LT/2021/21)** – 2021 – for project – "Investigation of electroplasticity effect on plain carbon steel under pulsed electric current - Experimental and Numerical Study"
- Environmental Impact Assessment of "Express Pearl Maritime Disaster National Project" - Thermal Modelling Team (Finite Element Analysis Centre, University of Sri Jayawardenapura, University of Moratuwa) – 2021
- Research project on "Design of low cost bio-compatible implant for bone defect replacement" in collaboration with Imperial College London through iProtect grant - 2022
- Research project on "Design of external fixators for long bone injuries" in collaboration with Imperial College London through Global Health Challenge Grant – 2021

### ➤ **Ethical Clearances Obtained for Research Work**

- a) University of Sri Jayawardenapura, Faculty of Medical Sciences, Application Number 18/21, Knowledge of micro plastics pollution and its health effects among Sri Lankans E.A.S.T. Edirisinghe, Dr. K M Thilini Gunasekara, Dr. Lishanthi Wijewardene, Dr.A.A.G.A Abeygunawardane
- b) University of Sri Jayawardenapura, Faculty of Medical Sciences, Application Number 43/20, Mechanical Characterization and Numerical Modelling of Human Tongue Tissue. E.A.S.T. Edirisinghe, Dr. K M Thilini Gunasekara, Dr. Lishanthi Wijewardene, Dr.A.A.G.A Abeygunawardane
- c) University of Kelaniya, Faculty of Medicine, Pilot study to assess safety of new Low Cost External Fixators for Long Bone Fractures, Dr Pujitha Silva, Dr Parakrama Dharmarathne, Dr A.A.G.A Abeygunawardane, Dr P.C.I. Wijesinghe, Dr Lakshitha Fernando, Prof Anthony Bull, Dr Saeidi Mehdi, Dr Milandri Giovanni.

## C. Supervising and Coaching Activities

- Supervised 10 undergraduate research students / 1 MPhil student and 1 MSc student between 2018 to date.
- Faculty Mentoring Group Co-coordinator - coordinating and administration of mentoring activities for semester-1 students within the department for the year 2021.

## D. Administrative and Professional Activities

- Final Year Project coordinator - MT4203 - Research Project coordinator (2019 To 2022)
- Lab - in charge of "*Foundry Laboratory*" of Department of Materials Science and Engineering. (2019 To date)
- Symposium Chair -Chairperson in hosting the department symposium "*Materials Engineering Symposium on Innovations for Industry*" MESII from 2019 To 2022.
- Semester 2 practical coordinator of the department of Materials Science and Engineering. (2021 To 2022)
- Semester 4,8 practical coordinator of the department of Materials Science and Engineering. (2023 to date)
- Engineering Faculty Nominee (representative) for "*University Ethical Review Committee*" (2021 to date).
- Nominated as a reviewer of competitive research grants by the National Science Foundation (NSF) – Project title "Development of Prosthesis and dental filling material from Nanotechnologically modified Eppawala Apatite and Polymer Nano composites and feasibility study for manufacturing". (2022 December)
- Working Committee Member, Lead (Project) – "*Center for Bio Medical Innovations*", University of Moratuwa, Member of Musculoskeletal Research Group (2019 to date)
- Appointed as a member of "*Technical Evaluation Committee (TEC)*" for Procurement of "Design, Prototyping and Pilot Plant Fabrication of Latex Auto Filling and Tray Conveyor" System by Rubber Research Institute (RRI) Sri Lanka (2021 - April - 30) from university of Moratuwa.
- Invited Member to represent "*Industrial Advisory Board*" of the Department of Mechanical Engineering, The Open University of Sri Lanka - 4th November 2021 from University.
- Invited member for the "*Scientific Review Committee*" of the annual international research symposium 2021 by the University of Vocational Technology held on 14th December 2021.
- Invited Reviewer for the 10th annual scientific research sessions 2021 (ASRS 2021) organized by the Faculty of Applied sciences, the South Eastern University of Sri Lanka in the field of Chemistry (Material Science) for the submission – "*Effect of Delay in Quenching on Hardness of High Carbon Steel*".
- Invited Referee of Technical Papers for the Journal "ENGINEER" by the Institution of Engineers Sri Lanka - " Studying the communication delay of the soft finger controlled over the internet", December 2019.
- Invited Reviewer for the research proposal evaluation for the award of Degree of Master of Philosophy (MPhil) by Faculty of Engineering Technology, Department of Mechanical Engineering, OUSL -"The Fatigue Performance of High Strength Steel Railway Bridges based on Fracture Mechanics Approach", October 2019
- Invited Reviewer for the research proposal evaluation for the award of Degree of Master of Philosophy (MPhil) by Faculty of Engineering Technology, Department of Mechanical Engineering, OUSL - "Modelling / Experimental Characterization, Improving Chameleon Inspired Robot Locomotion Platform". April 2020
- Invited Reviewer for the technical papers on "Open University Research Sessions 2020" or OURS 2020. - "Development of Smart Pedestal Fan", "Design and development of a

floral form cutting machine to improve process efficiency", "Automotive side mirrors to visualize blind spots", July 2020

- Invited Reviewer on the paper title "Dissolved Contaminant Transport in Homogeneous and Differently Layered Geosystems: An Experimental and Numerical Investigation" for 9th Young Scientist Forum Symposium on 2020 March
- Appointment as a PhD Examiner to evaluate the thesis on the title of - " A Forensic based Empirical Study on Analysis of the Ricochet Behavior and Ricochet Impact Marks of Kalashnikov Bullets" by Faculty of Graduate Studies, University of Kelaniya, Sri Lanka, 02ns June 2022

***Visiting Lecturer (Part Time)***

***2020 Aug to 2021 Aug***

***Dept. of Polymer Sciences, Faculty of Applied Sciences  
University of Sri Jayawardenapura, Sri Lanka.***

**Teaching Duties**

- Conduct lectures on the module – “Computational Tools for Polymer Industry and Finite Element Analysis” for undergraduate students.
- Conduct formative assessments and delivering feedback on the assessments.

***Visiting Lecturer (Part Time)***

***2019 Oct to 2020 June***

***Study World Lanka pvt. (Ltd.)  
Sri Lanka***

Study World Lanka Campus is a campus affiliated to University of Bolton UK and Pearson UK meeting international standards.

**Supervising Duties**

Supervised and Evaluate 10 Undergraduate projects for the Module – “Design and Individual Project” leading to BEng(Hons) Mechanical Engineering.

***Visiting Lecturer (Part Time)***

***2018 Sep to Now***

***Department of Mechatronics Engineering,  
School of Engineering, Sri Lanka Technological Campus, Sri Lanka Telecom.***

**Teaching Duties**

- Conduct lectures on the following modules – “Machine Design”, “Advanced Manufacturing Processes”, “Introduction to Manufacturing Processes” and “Mechanical Vibrations” for undergraduate students.
- Conduct formative assessments and delivering feedback on the assessments.

***Chairman. (2022 Aug to Present) and Lead (Technical) (2018 Oct to Present)***

***Finite Element Analysis and Simulation Center (FEAS), Sri Lanka***

- **Supervising and Coaching Duties**

- Delivered two Short Courses on “Finite Element Analysis” to industrial partners (specially for the plastic and rubber industry personal) in Sri Lanka on 2019 January and 2019 July. This short course includes full day lecture on the above topic and full day practical class on ABAQUS commercial FEA software.
- Supervise undergraduate / postgraduate projects conducted by other higher education institutes from Computer Aided Engineering Design Aspect.

**B. Research Activities** - Responsible for industrial consultation of manufacturing and design issues of engineering products/ and development of user-defined materials models to simulate complex engineering problems (mechanical/thermal/chemical/electrical) using commercial FEA solvers

- Development of a “*Numerical Prediction tool*” using Finite Element Analysis for Rubber Curing Simulation for Global Rubber Industry (GRI) Sri Lanka using ABAQUS user subroutines.
- Numerical Simulation of Heat Transfer of Epoxy based Silicon Wafer under constant pedestal temperature in ambient conditions for Swiss Ranks (Pvt) Ltd, Singapore (semiconductor industry).
- Design and optimization of industrial tire curing mould through Thermo-mechanical stress analysis for Laughs Tire (Pvt) Ltd., Sri Lanka.
- LLDPE Water Tank – “*Design and Structural Analysis*” for Omega Blue Pvt Ltd., Australia.

**C. Administrative and Professional Activities.**

- As a Chairman it is a responsibility to overlook overall operation of Finite Element Analysis and Simulation (FEAS) center, create awareness about the center and make strategic decisions on the FEAS center to achieve its “*Vision*” through the “*Mission*”.
- Present monthly report on the status of the FEAS center at the executive committee meeting of Plastic and Rubber Institute, Sri Lanka.
- Invited Moderator for the Webinar Series conducted by the Plastics and Rubber Institute of Sri Lanka (PRISL) on the topic of "Numerical Simulation - Engineer's Playground" - on 30th January 2021
- Invited resource personnel for the Webinar Series conducted by the Department of Industrial and Manufacturing Engineering, University of Peradeniya; on the topic of "Applications of Numerical Simulations in Industrial / Design Engineering - A Practical Approach " on 09th Dec 2020.
- Awareness session on "The use of Finite Element Analysis" for the Nautical Engineering Design Team of the Colombo Dockyard Pvt. Ltd, Sri Lanka on 4th Oct 2020
- Awareness session on the "Numerical Simulation Technology in Science and Engineering" for the Research and Development Team of the Ministry of Defence (MOD), Sri Lanka on 24th Sep 2020
- Invited Lecture - "Use of Finite Elements for Designing Products" for the Graduate ship course in Polymer Technology conducted by Plastic and Rubber Institute of Sri Lanka (PRISL) on 6th July 2019.
- Invited Guest Speaker at the technical session on the topic of "Finite Element Analysis towards Sri Lankan Industry" at the graduation ceremony of SFS Academy / the sign event of MOU between FEAS center and SFS Academy on August 29 2019 at BMICH

- Invited Guest Speaker at the awareness session on the topic of "Finite Element Analysis towards Sri Lankan Industry" to the group of exporting companies on October 3rd 2019 at the National Chamber of Exporters (NCE) Colombo.

***Design (Research and Development) Engineer  
Novena Tec Pvt. Ltd.***

***2017 Jan to 2018 March***

It is an engineering based company that innovates, develops and designs its own products. Established in 2008 Novena Tec's corporate headquarter are currently situated in Orlando, Florida USA. It has its own design centres, CIP solutions and fabrication centres which assist in the operation of a large network of manufacturing facilities and sales offices throughout the United States, Canada, Singapore, Switzerland, India and other Asian Pacific Regions. Mainly I was involved in the design of semiconductor industry machineries with international companies, Applied Materials, Global Foundries Malta/Singapore, Texas Instruments - Dallas, Sony Japan, United Microelectronics Corporation - Taiwan and Semiconductor Manufacturing International Corporation China etc. As a design (R/D) engineer, I was responsible for

- Provide design and development new products and responsible for making improvements or updates to existing design and development standards.
- Resolve problems and improve manufacturability and serviceability of products working with manufacturing and service personnel.
- Develop and recommend changes.
- Reduce product cost and improve design performance working with other groups on value engineering initiatives.
- Assist moderately complex engineering assignments and engineering designs.
- Provide technical guidance to management if required.
- Investigate, develop and implement new process technologies of major scope.
- Record production details of small and large projects.
- Keep trends and the needs of customers in mind when designing.
- Understand Novena Tec's objectives and how the decisions affect product cost, performance, and quality.

**Design (Research and Development) Projects**

- Design and implementation of High Performance Aluminium PVD (300 mm silicon wafer) process kit with the prime aim of reducing Aluminium whisker defect on the silicon wafer substrate. The process kit includes techniques to increase the heat transfer efficiency to have an excellent quality thin film products on the silicon wafer substrates. This solution is for several global semiconductor customers such as Global Foundries Singapore, USA and Germany, Applied Materials and for Wuhan Xinxin semiconductor company China. The product will be marketed as HP Supera®
- Design and implementation of auto level measuring system for SiCoNi PVD chambers by means of digital gyroscope technology. The technique is a unique CIP solution that will eliminate manual levelling procedure with dial gauges and improve the thin film deposition process efficiently for any

PVD chambers. This solution is for several global semiconductor customers such as Global Foundries Singapore, USA and Germany, Applied Materials. The product will be marketed as SiCoNi Centrum®

- Design and implementation of Al target cooling mechanism by utilising micro-cooling fins and micro fluidics on the target back plate for various semiconductor machineries. The product is being marketed as Micro-Grooloid® by Novena Tec (Pvt) Ltd. This solution is for several global semiconductor customers such as Global Foundries Singapore, USA and Germany, Applied Materials.
- Design and implementation of spin coater for the semiconductor industry. This project is currently being developed. The spin coater has the capability to acquire uniform thickness of coating and curing processes within the same chamber and the assembly is equipped with metrology and wafer washing facility for 300 mm silicon wafer. The product will be marketed as HP Spin Coater®.

### ***Patent***

US PATENT Application Number - 15/660,198

Target plate is an important part of the process. It is used to fix the solid part (target) that is made out of the material, which is needed to be deposited on the silicon wafer. The current technique used for cooling purpose has a spiral shape cooling line that has semi-circle cross section on the surface. Current cooling mechanism is not sufficient to maintain a constant temperature due to following reasons.

***Research Associate, Wolfson School  
Loughborough University, UK.***

***2016 March to 2016 October***

***Project Partners*** – University of Portsmouth (UoP), Department of Materials, Imperial College (IC), University of Southampton (UoS), EOn, Airbus, QinetiQ, Rolls Royce, Mahle, Alstom, NASA.

***Project Description*** – Oxidation Damage at a Crack Tip and Its Significance in Crack Growth under Fatigue-Oxidation Conditions

The Project was funded by EPSRC and the Royal Society. In this study, oxidation behaviour of Ni based alloys in land based gas turbines is studied. The materials will be investigated namely single crystal (SX) alloy, directionally solidified (DS) alloy and poly crystalline low solvus high refractory (LSHR) turbine disc alloy. The ultimate goal of the study is to establish a computational model to simulate fatigue and oxidation damage near crack tip and its effect on crack growth. I was involved in

- To develop a new material model, considering the coupling of crystal plasticity with mass transport, for simulation of oxygen diffusion and damage at the crack tip.
- Validation of oxygen diffusion / damage analyses near crack tip and model refinement.
- Produce a fracture criterion and modelling of crack growth under fatigue oxidation using FE software ABAQUS and user defined subroutines (UMAT).
- Planning, managing and conducting the work to agreed deadline.

***Marie Curie Early Stage Researcher.***

***2014 Jun to 2015 Feb***

**Research Partner** – Eurotech, Poland

**Project** – Vibro – impact machines based on parametric resonance: Concepts, mathematical modelling, experimental verification and implementation (PARM-2)

The project was funded by Horizon 2020: an EU framework programme for research and innovation. I was responsible for developing and implementing finite-element schemes using modified routines of standard codes as well as specially designed material subroutines to model deformation and fracture processes in components of vibration machines, as well as to model the process of dynamic crack propagation using various approaches including cohesive zone elements and X-FEM. The developed schemes were validated by results of experimental studies. I was involved in

- Investigating the response of various components of vibration machines to application-relevant dynamic loading and to analyse conditions for the onset of cracks in such components as well as specific features of their propagation.
- Participating in research involving the use of codes, algorithms, routines and their implementation into commercial finite-element software packages and performing numerical simulations of various cases.
- Carrying out literature reviews, to write up technical reports monthly and two research papers for publication of the results obtained.
- Planning, managing and conducting the work to agreed deadlines.
- Assisting in guiding and training postgraduate students involved in experimental work related to the project.
- Assisting in developing new lines of research and the writing of research proposals.
- Visiting Eurotech.Inc in Poland and discuss the research work with the president of the Eurotech.Inc; Mr. Janusz Michalcewicz and met Professor Feliks Stachowicz in Rzeszow University of Technology on January 2015.
- Maintaining confidentiality where appropriate and to ensure that intellectual property (IP) agreements are met.



***Wolfson School of Mechanical and Manufacturing Engineering,  
Loughborough University, UK.***

- Conducting tutorials and demonstrating practical work to undergraduates and postgraduate students for modules - – Mechanics of Materials 2 (MMB100) and Design of Machine Elements (MMB403)
- Assisting, supporting and advising students on their work in laboratories.
- Assisting students in solution of fundamental engineering mechanics problems.
- Conducting exam invigilation duties in Loughborough University Examination Division leading a team of 15 invigilators and supervising nearly 900 students.

***University Teacher***

***2011 July to 2012 Oct***

***Department of Mechanical Engineering, Faculty of Engineering,  
The Open University of Sri Lanka.***

- Provoke students to understand of fundamentals of engineering subjects
- Evaluate students and providing them with performance feedback
- Conducting lectures and practical demonstrations in the engineering modules –Applied Mechanics and strength of materials, Strength of Materials II, Mechanics of Materials, Industrial Engineering, Dynamic of Mechanical systems, Materials Engineering, Production Management, Elementary machine design etc.

**Academic Qualification**

- Certificate Course in Teaching in Higher Education (CTHE) by Staff Development Center of University of Sri Jayawardenapura, Sri Lanka – Accredited program by the University Grant Commission, Government of Sri Lanka for academics in HEIs. **2019 April**
- PhD in Mechanical Engineering specializing on Mechanics of Advanced Materials, Wolfson School, Loughborough University, UK **2012 Oct – 2016 Dec**
  - Thesis Title - Computational Analysis of Shear Band Initiation and Propagation in Zr-Cu-based Bulk Metallic Glass.
  - Supervisors – Prof Anish Roy, Prof Vadim Silberschmidt
- Bachelor of Technology in Mechanical Engineering, First Class (Hons) – GPA – (3.94/4.0), Faculty of Engineering Technology, Sri Lanka **2005 Jun – 2011 July**
  - Thesis title – Design and Fabrication of Automated Green Tire Resin Spraying Machine. Industry Collaborator – CEAT International Tires Ltd.
  - Supervisor – Prof Ranjith Arthanayake

**Honors and Awards**

- **PhD Full Scholarship** by the Wolfson School of Mechanical, Electrical and Manufacturing Engineering, UK for the period of **2012-2015**.
- Won **Best Student Gold Medal Award** in general convocation, Open University of Sri Lanka with a GPA of 3.94/4.00 and with only first class honours graduate from Faculty of Engineering Technology, **Dec 2011**.
- Award for **Outstanding Research Performance** for the **Year 2021** by University of Moratuwa, Sri Lanka.
- Award for **Outstanding Research Performance with Distinction** for the **Year 2022** by University of Moratuwa, Sri Lanka.
- Won **third place for the best poster presentation** in Wolfson School Research Student Conference, Loughborough University, UK, **Jun 2014**.
- Won **Second place for the Eng Nimal Chandrasena Award** for the best paper presented by young members (under 35 years) at the annual sessions of the Institution of Engineers, Sri Lanka (IESL), on the research topic of “Reduction of tire scrap and rework level by automation of the green tire resin spraying machine” **Oct 2011**.
- **Travel bursary** to attend Advances in Micromechanics of Materials (MICROMECH 2014) Rzeszow, Poland by MC-IAPP-Industry-Academia Partnership and Pathways (IAPP).
- **Travel bursary** to attend The 8<sup>th</sup> International Symposium on Mechanics of Materials and Structures (ISMMS 2015) Augustow, Poland by MC-IAPP-Industry-Academia Partnership and Pathways (IAPP).

## **Professional Affiliation**

- Member of the Institute of Physics (UK) (MInstP) Mem. No: 1171326 (from 2016 to 2020)
- Associate Engineer – Engineering Council, Sri Lanka. Reg No - 202420
- Associate member of the Institution of Engineers (Sri Lanka) (AMIESL) Mem. No:AM-12700
- Professional Review, Engineer in Society (“B” Paper) Examination leading to “Chartered Engineer” successfully completed on 2017 December 21.
- Member of the Marie Curie Alumni Association.

## **Research Publication and Outputs**

### **Peer Reviewed Conference Proceedings**

- **Abeygunawardane AAGA**, Edirisinghe EAST, Karunarathne A, Ariyaratne D, Dissanayake PH, Yasawardane SG, “Mechanical Characterization Human Muscle Tissue –A Preliminary Study”, 134<sup>th</sup> International Medical Congress, Sri Lanka Medical Association, Colombo, 2021
- Rangana H.G.S, Sivahar V., **Gayan Aravinda Abeygunawardane**, “Quantitative Estimation of Residual Stresses in Quenched Steel through Ultrasonic Parameters”, International Conference on Innovation and Emerging Technologies (ICIET) 2022, University of Sri Jayawardenapura, Sri Lanka, 2022.
- Dinelka Somaweera, **Gayan Aravinda Abeygunawardane**, Sampath C Weragoda, Vigneshvaran Sivahar, “Mechanical and Thermal Characterization of Sri Lankan Vein Graphite Powder”. Moratuwa Engineering Research Conference (MERCon) 2021, University of Moratuwa, Sri Lanka, 2021 (published in IEEE Explore).

- Dinelka Somaweera, **Aravinda Abeygunawardane**, Sampath Weragoda, Sisira Ranathunga, ". Effect of Vein Graphite Powder on Mechanical, Curing, and Thermal Properties of Solid Tire Vulcanizate.", International Conference on Recent Advances in Materials and Manufacturing (ICRAM 2021), Kolhapur, India, 2021
- Nayanathara Hendeniya; **Gayan Aravinda Abeygunawardana**; Indika De. Silva; Shiranga Wickramasinghe,. "The Tensile Electroplasticity of Low Carbon Steel with Low Amplitude Pulse Current". Moratuwa Engineering Research Conference (MERCon) 2020, University of Moratuwa, Sri Lanka, 2020. (published in IEEE Explore)
- K. Jurmey, N. Sharma Ghimire, V. Sivahar, **G. Aravinda Abeygunawardane** and M. Piyathilake, "Prediction of True Compressive Flow Stress of AA 6063 Through Ultrasonic Attenuation.", Moratuwa Engineering Research Conference (MERCon) 2020, University of Moratuwa, Sri Lanka, 2020. (published in IEEE Explore)
- Bandara L, Rangana P, Piyathilaka M, **Abeygunawardane A**, Sivahar, doi: 10.1109/MERCon.2019.8818808, ". Effect of Corrosion Surface Topography on Fatigue Life of Low Carbon Steel." Moratuwa Engineering Research Conference (MERCon) 2019, University of Moratuwa, Sri Lanka, 2019, 599-604, (published in IEEE Explore)
- **G. Abeygunawardane-arachchige**, Automation of the Green Tire Resin Spraying Machine to Reduce Tire Scrap level and rework level, Annual Academic Sessions OUSL, 2011.
- Vahid Nekouie, **Abeygunawardane A.**, Anish Roy, V.V Silberschmidt, "Indentation study of mechanical behavior of Zr-Cu based metallic glass.", International Conference on Advanced Problems in Mechanics (APM 2015), St. Petersburg, Russia, 2015 May 2015,
- Alessandro Schiavone, **Abeygunawardane A**, V.V Silberschmidt, "Crack growth in notched specimen under repetitive impact.", International Symposium on Mechanics of Materials and Structures (ISMMS), Augustow, Poland, 2015,
- Vahid Nekouie, **Abeygunawardane A**, Anish Roy, V.V Silberschmidt, "Study of Mechanical Deformation of a Zr-Cu based BMG: Experiments and Numerical Studies.", 11th World Congress on Computational Mechanics (WCCM XI), Barcelona, Spain, 2014,
- Vahid Nekouie, **Abeygunawardane A**, Anish Roy, V.V Silberschmidt, "Elastic-Plastic properties of BMG: Indentation and Numerical Studies.", Advances in Micromechanics of Materials (MICROMECH 2014), Rzeszow, Poland, 2014
- Vahid Nekouie, **Abeygunawrdane A**, Anish Roy, V.V Silberschmidt, "Mechanical Behaviour of Zr based Metallic Glass in Indentation.", 20th International Symposium on Metastable, Amorphous and Nano-structured Materials (ISMANAM 2013), Torino, Italy, 2013,

## Peer – Reviewed Indexed Journals / Books / Book Chapters

- P.L.N Fernando, **Aravinda Abeygunawardane**, PCI Wijesinghe, Parakrama Dharmarathne, Pujitha Silva, "An Engineering Review of External Fixators.", Medical Engineering and Physics,98,2021
- **Abeygunawardane, A.A.G.A**, Edirisinghe, E.A.S.T, Karunarathne, A., Ariyaratne H.T.D.W., Dissanayake, P.H., Yasawardane, S.G.,". Passive Mechanical Characterization of Human Skeletal Muscle Rectus Femoris of Sri Lankan Test Subjects.", ENGINEER (Accepted on 14th Nov 2021),2021
- Dinelka Somaweera, **Aravinda Abeygunawardane**, Sampath Weragoda, Sisira Ranathunga, ". Effect of Vein Graphite Powder on Mechanical, Curing, and Thermal Properties of Solid Tire Vulcanizate.", Materials Today: Proceedings,2021
- **G. Abeygunawardane Arachchige**, V. Nekouie A. Bell,". Experimental and computational analysis of initiation and propagation of shear bands in bulk metallic glasses.", Materials Research Express,2019.
- V.Nekouie, **G. Abeygunawardane-arachchige**, U. Kuhn, A. Roy, and V.V. Silberschmidt, Indentation-induced deformation localisation in Zr-based metallic glass, Journal of alloys and compounds, 2013.
- A. Schiavone, **G. Abeygunawardane-arachchige**, V.V. Silberschmidt, Crack Initiation and propagation in ductile specimen with notches: Experimental and numerical study, Acta Mechanica/Springer Vienna, 2015
- V.Nekouie, **G. Abeygunawardane-arachchige**, A. Roy, and V.V. Silberschmidt, Bulk Metallic Glasses: Mechanical Properties and Performance, - In: Mechanics of Advanced Materials: Analysis and Properties. V.V. Silberschmidt, V.P. Matveenko (eds.), Springer International Publishing, 2015, DOI: 10.1007/978-3-319-17118-0\_5.
- "Engineering Mechanics" - Course Materials for B. Tech Engineering Degree.", The Open University of Sri Lanka,2018

## Referees

Professor Vadim V. Silberschmidt  
 Professor of Mechanics of Materials,  
 ICoVIS Director, Head, Mechanics of Advanced Materials Research Group,  
 Wolfson School of Mechanical and Manufacturing Engineering,  
 Loughborough University, Loughborough,  
 Leicestershire, LE11 3TU,  
 United Kingdom.  
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Professor Anish Roy,  
 Professor of Mechanics of Materials and Processes,  
 Wolfson School of Mechanical and Manufacturing Engineering,  
 Loughborough University, Loughborough,  
 Leicestershire, LE11 3TU, United Kingdom.  
**Phone:** +44 (0)1509 227637  
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