MATERIALS ENGINEERING SYMPOSIUM ON INNOVATIONS FOR INDUSTRY 2021

INNOVATIVE MATERIALS THROUGH MATHEMATICAL MODELING AND SIMULATIONS

BOOK OF ABSTRACTS

21ST OF DECEMBER 2021

MATERIALS ENGINEERING SYMPOSIUM ON INNOVATIONS FOR INDUSTRY 2021

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Materials Engineering Symposium on Innovations for Industry (MESII-2021) is being organized for the 4th time by the Department of Materials Science and Engineering of University of Moratuwa. The main objective of this event is to facilitate the industry to recognize and gain awareness on the research activities carried out by the final year undergraduates of the Department as well as provide an opportunity to get a comprehensive understanding about the activities and facilities of the Department.

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Message from the Dean

I congratulate the Department of Material Science and Engineering for successfully organising the Materials Engineering Symposium on Innovations for Industry (MESII) for the fourth time in succession during this year. The Faculty of Engineering is glad to witness the Department providing an opportunity for its undergraduates to present their research findings to a wider audience consisting of both academia and industry. The aim of the symposium, showcasing the creativity and innovativeness of the final year project work carried out by the students aligns perfectly with the goal of the Engineering Faculty "to nurture the inquiring mind and develop knowledge and skills to face challenges".

The symposium also encourages the department industry interaction in the context of research. The Materials Science and Engineering Department wishes to fine-tune their future pathways in the applied research sector through the exposure and feedback received by the industry. Further, it has been a long felt need that prospective engineering students be properly informed on the scope and the opportunities available in the field of Materials Engineering in order to equip them with better choices for their future career plans.

Motivating engineering graduates to be job creators rather than job seekers is one of our priorities in the undergraduate programmes of the Faculty of Engineering. The Faculty recognises that research skills, rather than being limited to postgraduate students, serve to enhance independence, self reliance and innovativeness of its undergraduates too. This symposium will hence add value to the already highly acclaimed degree of engineering earned by the undergraduate students of the Faculty.

I wish all the very best for the success of the event and do hope that its benefits will have a lasting effect on the next generation of Materials Engineers produced by the Department.

Prof. N. Wickramarachchi
Dean/Faculty of Engineering
University of Moratuwa

Message from the Head of the Department

The Department of Materials Science and Engineering in collaboration with the Society of Materials Engineering Students is organizing the Materials Engineering Symposium on Innovations for Industry (MESII) for the fourth time this year. Due to the prevailing pandemic situation we decided to hold this as a virtual event this time. This symposium was the initiative of one of our young academics Dr. Mrs. Asha Galhenage which had a two-fold objective initially; showcasing the research capabilities of our undergraduates, and enhancing industry-department interactions.

However, from the year 2019, the scope of this symposium was expanded towards creating awareness among the students of physical science stream of GCE (A/L) about the field of Materials Science and Engineering in general and the research activities of the department in specific with a focus on innovations. This year too, the scope remains the same even though we are using an online platform to adapt for the new normal.

Dr. Aravinda Abeygunawardane, serves as the principal organizer and program chair of MESII for this year as well. I take this opportunity to congratulate him for his efforts and commitment shown in organizing and coordinating an important event like this, especially under the prevailing pandemic. I also wish to express my sincere gratitude to all the academic and non-academic staff of the department who supported and helped Dr. Aravinda in successfully organizing this symposium. I am also very thankful for all the students who dedicated their valuable time to be instrumental in this event as the members of the Society of Materials Engineering Students liaising with Dr Aravinda.

Finally, I wish to congratulate all the young researchers who will be presenting their papers and posters today on this virtual platform.

Mr. V. Sivahar
Head/Department of Materials Science and Engineering
University of Moratuwa

Message from the Programme Chair

It is with great pleasure to welcome you to our fourth annual event; "*Materials Engineering Symposium on Innovations for Industry 2021*" (MESII 2021) with the association of the Society of Materials Science and Engineering (SOMES). As the program chair for the second consecutive time, and the final year undergraduate project co-ordinator, I strongly believe the symposium will provide an enhanced outlook of the research activities that we carry out in the Department of Materials Science and Engineering, University of Moratuwa; to cater the current technological demand in Sri Lanka while sustaining the knowledge and attitudes of our graduates.

Nevertheless, the symposium this year is to be hosted through an online platform due to prevailing pandemic conditions around the world. There is no hesitation that pandemic has hit the progress of many research activities carried out in the Department of Materials Science and Engineering at undergraduate as well as postgraduate level. The nature of work carried out in the department is mainly lean on laboratory facilities. Hence most of the objectives of the original research proposals has had to evolve towards modelling and simulation aspects.

The symposium theme is "*Innovative Materials through Mathematical Modelling and Simulation*"; as on par with current circumstances. In parallel with the technical sessions, we host a short workshop for the third time on the theme of "*Recognizing the Rewarding Trends in Engineering*" for Advanced Level school students studying in the physical science stream.

I strongly believe as the program chair that, this event will be effective to you in gathering new knowledge in Materials World and as industrialists, to collaborate with us to advance for the betterment of your organization and ultimately Sri Lanka.

I take this opportunity to thank everyone who helped and supported to make this symbolic online event a success and hope the time spent in MESII 2021 is worthwhile and exciting. As the program chair, I hope you will continue to support future MESII events for the betterment of every aspect and let's hope we all can spend an exciting time in person in coming MESII events.

Dr AAG Aravinda Abeygunawardane
Program Chair
MESII 2021