

# Programme

## ISBEI 2022

3<sup>rd</sup> Unisa International Symposium in Biomedical Engineering Innovation

September 22 – 23, 2022

Hybrid

Virtual (**MS. Teams**) and Physical (**Pretoria, CSIR  
Knowledge Commons, Building 50**)

Joint Symposium:



Define tomorrow.



Programme

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# Programme

## WELCOME MESSAGE

Dear Colleagues and friends,

The organizing committees of the 2022 International Symposium in Biomedical Engineering Innovation are delighted to welcome you to the joint hybrid symposium. The symposium reflects the latest advances, innovations, and applications of both experimental and computational biomechanics. The objective of the upcoming symposium is to predominate new manifesting research areas as well as to present innovative technologies in bone biomechanics, soft tissue mechanics, surgical implants, and bio-fluids as well as mechanical and mathematical modeling, imaging, and visualization. The application of tissue engineering leads to contributing novelty therapies for different diseases.

We would like to extend a special thank you to our committee members, our reviewers, and to the attendees who participated actively in the symposium. Hope we can all benefit from the symposium intellectually. This symposium would not have been possible without the speakers, thank you.

Our last wish is that you have a very successful symposium!

Yours Sincerely

**Symposium Organizing Committee**

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### IMPORTANT INFORMATION

Please, ensure that you are aware of the following details before the symposium commences

#### MEETING ID



##### LINK 1 (2022/09/21)

- <https://tinyurl.com/32pnwwuv>

##### LINK 2 (2022/09/22)

- <https://tinyurl.com/46kd94yb>

#### TEST SESSION



Please, check the details of the testing time on **2022/09/21** and show up on time

#### TIME ZONE



**GMT +2:00**  
**South African**  
**Standard Time**

Please, take note of the time difference between this time and your country's time

# Programme MEETING AGENDA

South African Standard Time (GMT +2:00)

2022/09/21

## TEAMS TEST SESSIONS

09:00 – 09:50	09:50 – 10:40	10:40 – 11:30
0100	006	022
0200	008	0700
0300	010	0800
0400	012	
0500	014	
0600	016	
002	018	
004	020	

- The test will include screen sharing, video, audio, and how to raise a hand in Teams. Presentation slides and computer equipment need to be prepared beforehand.
- The testing session is compulsory for all the presenters.
- The test session may only take about 3 minutes.

**Note:** 10:40 – 11:30 time slot is open to participants who could not attend at allocated times.

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# Programme MEETING AGENDA

TIME	ACTIVITY	PRESENTER
<b>Host: Symposium Chair</b> – Dr. Ngwangwa/Prof. Nemavhola/Ms. Msibi		
08:00 – 08:20	<b>Opening Remarks</b>	<b>Acting Executive Dean</b>
Convenor – Prof DM Madyira, University of Johannesburg (UJ), South Africa		
08:25 – 09:05	<b>Keynote speaker 1 (0100)</b> Presentation type: <b>Online</b>  <b>Topic:</b> 3d-printing for medical applications	<b>Mr. Adam Imdaadulah</b> , Central University of Technology, (CUT), South Africa Project Engineer at CRPM, The CRPM is located at the Central University of Technology, Free State (CUT) in Bloemfontein and was established in 1997 as part of a research initiative. At that time, Additive Manufacturing (AM) also commonly known as 3D printing, was in its infancy worldwide. Through the foresight of the founders of the CRPM, a laser sintering machine was imported from Germany for research at the Faculty of Engineering. This was the fifth machine in the country. It was soon realised that our equipment could benefit the industry by offering a service in rapid prototyping. This would fulfil one of the missions of the university which is to introduce new technology to the South African manufacturing industry. The centre received ISO 13485 certification for 3D printing of medical devices making it the first centre in SA and Africa to receive this prestigious certification for an Additive Manufacturing Centre
09:10 – 09:25	<b>Student 1 (002)</b> <b>Topic:</b> Design and development of a 3D porous dental implant	<b>Winnie Mtetwa</b> , University of South Africa (UNISA), South Africa
09:30 – 09:45	<b>Student 2 (004)</b> <b>Topic:</b> Design optimization and development of the pneumatic prosthetic foot	<b>Zanodumo Godlimpi</b>

TIME	ACTIVITY	PRESENTER
Convenor – Dr. Thanyani Pandelani, Council of Scientific and Industrial Research (CSIR), South Africa		
09:50 – 10:05	<b>Student 3 (006)</b> <b>Topic:</b> : Laser Additive Manufacturing of AlCrFeNiSi High Entropy Alloys for Energy Storage Applications	<b>Dada Modupeola</b>
10:05 – 10:20	<b>Break</b>	
10:20 – 10:35	<b>Student 4 (008)</b> <b>Topic:</b> Appropriate Mode of storage of Porcine heart myocardia without tempering with its passive mechanical properties	<b>Israel Mabuda</b>
10:40 – 10:55	<b>Student 5 (010)</b> <b>Topic:</b> Are Lead Protective Products Indispensable?	<b>Abdullah Kaymakci</b> , University of Johannesburg (UJ), South Africa
11:05 – 11:45	<b>Keynote speaker 2 (0200)</b> Presentation type: <b>Physical</b>  <b>Topic:</b> Are Lead Aprons Our Only Radiation Protection Option?	<b>Gülcihan Codel</b> 2012-2015 She worked as a Radiotherapy Technician at Liv Hospital Istanbul Ulus. Radiotherapy in charge of Liv Hospital Radiation Medicine Center (Liv Hospital-Georgia project) in Georgia between 2017-2019. In 2020, she installed the Gamma Knife device in the Radiotherapy department of Liv Hospital Bahçeşehir, Istinye University Hospital. Work as a Radiation Safety Consultant at Istinye University Hospital. She is a member of the Medical Physics Association, the American Association of Physicists in Medicine, and the South African Association of Physicists in Medicine and Biology. Stereotactic Radiotherapy, intensity modulated radiotherapy, Radiation oncology, Radiology, Nuclear medicine

TIME	ACTIVITY	PRESENTER
Convenor – Dr. HM Ngwangwa, University of South Africa (UNISA), South Africa		
11:55 – 12:35	<p><b>Keynote speaker 3 (0300)</b> Presentation type: <b>Physical</b></p> <p><b>Topic:</b> TBC</p>	<p><b>Prof. Sunday Fayomi</b>, Professor and Dean, College of Engineering, MNSE, AMWISA, MNATE, MNMS, RE.COREN, Leader: Materials Processing and Production Technology, Executive dean Department of Mechanical and Biomedical Engineering, Bells University of Technology, P.M.B 1015, Ota, Ogun State, Nigeria.</p> <p>1st top researcher in the world in the area of Composite, Electrodeposition of Materials, as at March 2021 Scopus-Scival Computation 1st top researcher in Material Science and Engineering by scholarly output in Nigeria as at March 2021 Scopus-Scival Computation 3rd top 500 authors by scholarly output in Nigeria as at March 2021 Scopus-Scival Computation 50th among top 500 authors by scholarly output in Africa as at March 2021 Scopus-Scival Computation.</p>
12:40 – 12:55	<p><b>Student 6 (012)</b> <b>Topic:</b> TBC</p>	<b>Lindokuhle Ngema</b> , Witwatersrand University (Wits), South Africa
13:05 – 13:20	<p><b>Student 7 (014)</b> <b>Topic:</b> Review of the Biomechanical properties of the fibro-glandular breast tissue</p>	<b>Tolulope Babawarun</b>
Closed		



## Programme

## MEETING AGENDA

TIME	ACTIVITY	PRESENTER
Convenor – Dr. Dithoto Modungwa, Council of Scientific and Industrial Research (CSIR), South Africa		
08:10 – 08:50	<p><b>Keynote speaker 1 (0400)</b> Presentation type: <b>Online</b></p> <p><b>Topic:</b> TBC</p>	<p><b>Dr. Lulu Wang, China</b> Lulu Wang, Ph.D., ASME Fellow Distinguished Professor of Biomedical Engineering Director of Biomedical Device Innovation Center, Shenzhen Technology University; 3002 Lantian Road, Shenzhen, China, 518118, Lulu Wang is currently a Distinguished Professor of Biomedical Engineering. Her research interests include medical devices, electromagnetic sensing and imaging, and computational mechanics. Dr. Wang is a Fellow of the American Society of Mechanical Engineers (ASME), and a member of IEEE, MRSNZ, AAAS, PSNZ, and IPENZ. She is an active editor/reviewer of numerous journals, books, and conferences. She has given more than 40 invited talks at national and international conferences. In the past 5 years, she has led a number of projects of national, provincial, and university-level projects commissioned by enterprises and has published 2 monographs and 11 single-author papers, over 70 first-author papers, and 7 first-author chapters. She also owns 11 authorized domestic invention patents, 2 international patents, and 4 Patent Cooperation Treaty (PCT) patents as a solo inventor.</p>
08:55 – 09:10	<p><b>Student 1 (016)</b> <b>Topic:</b> Towards the Selective Laser Melting of ultrathin NiTi structures</p>	<b>Londiwe Motibane</b>
09:15 – 09:30	<p><b>Student 2 (018)</b> <b>Topic:</b> Effect of high-energy ball milling parameters on spark plasma sintering of Ti-Mo-Zr powders for bioimplant applications</p>	<b>Mukhethwa Netshia</b>

TIME	ACTIVITY	PRESENTER
09:35 – 09:50	<b>Break</b>	
09:55 – 10:35	<p><b>Keynote speaker 2 (0500)</b> Presentation type: <b>Online</b></p> <p><b>Topic:</b> TBC</p>	<p><b>Dr. Tanvir Mustafy</b>, Military Institute of Science and Technology (MIST) Assistant Professor Department of Civil Engineering (CE) t.mustafy@ce.mist.ac.bd, Dr. Tanvir Mustafy's research is in the field of Structural Engineering, with particular focus on the complex Finite Element Modeling at the micro level of structures, Injury Biomechanics, Machine Learning, and Analytic Mechanics. Prior to joining MIST in 2019, Dr. Tanvir held PhD researcher position in the University of Montreal, Canada. He worked as a member of a prestigious scientist group led by one of the most renowned Research Chairs of Canada during his doctoral period. Dr. Tanvir traveled to France as a visiting scholar and spent three months working in Aix-Marseille University. Dr. Tanvir also worked in the Royal Military College of Canada as a visiting research fellow. Dr. Tanvir obtained his Ph.D. in July 2019. He also holds an MSc. degree in Structural Engineering from the University of Alberta, Canada and a BSc. degree from BUET, Dhaka, Bangladesh.</p>
Convenor – Prof. DA Desai, Tshwane University of Technology (TUT), South Africa		
10:45 – 11:25	<p><b>Keynote speaker 3 (0600)</b> Presentation type: <b>Physical</b></p> <p><b>Topic:</b> Biomedical Applications of 3D Printing and Additive Manufacturing</p>	<p><b>Dr. Anand Kumar Subramaniyan</b>, Indian Institute of Technology Jammu, India</p> <ul style="list-style-type: none"> <li>• PhD (2009-2013), Metallurgical and Materials Engineering, IIT Madras.</li> </ul> <p><b>Academic Interests</b> Surface Engineering Fretting Wear, Fatigue &amp; Fracture, Experimental Tribology, Non-traditional Machining, Artificial Neural Network for Wear Prediction. Natural Fiber Reinforced Composites, FEM of Metal Forming Processes, Additive Manufacturing."</p>

# Programme MEETING AGENDA

TIME	ACTIVITY	PRESENTER
11:35 – 12:15	<b>Keynote speaker 4 (0700)</b> Presentation type: <b>Physical</b> <b>Topic:</b> Computational and experimental models of thrombosis	<b>Prof. Malebogo Ngoepe</b> , University of Cape Town (UCT), South Africa The director of CERECAM and an associate professor in the Department of Mechanical Engineering at the University of Cape Town. <b>Research Interests:</b> Biomechanics
12:20 – 12:35	<b>Student 3 (020)</b> <b>Topic:</b> The effect of optimization model on the accuracy of constitutive models for curly hair fiber	<b>Lebogang Mathebela</b>
12:40 – 13:40	<b>Break</b>	
13:45 – 14:25	<b>Keynote speaker 5 (0800)</b> Presentation type: <b>Online</b> <b>Topic:</b> Predicting Risk of Traumatic Brain Injury through Computational Head Models	<b>Prof. Rika Carlsen</b> , Robbert Morris University, Illinois, America An associate professor of mechanical and biomedical engineering is one of the scientists taking part in the PANTHER program, funded by the U.S. Office of Naval Research. The three-year program includes scientists from government laboratories, the industry sector, and several universities. Carlsen's role will be to expand her research and simulations with a highly detailed computer model of a human head, including the skull, fluids, and brain tissue, to be used in simulations testing response to low intensity or sub-concussive impacts and blows, as well as higher severity impacts and blast waves from explosions.
14:35 – 14:50	<b>Student 4 (022)</b> <b>Topic:</b> Materials used in the development of Dental Implants.	<b>Munenge Emanuel</b> , University of South Africa (UNISA), South Africa
15:00 – 15:45	<b>Closing</b>	<b>Acting Director: Prof. Maladzi</b> , University of South Africa (UNISA), South Africa

# Programme

## SYMPOSIUM ORGANISING COMMITTEE 2022

### **Symposium Program Chairs**

- Prof F Nemavhola
- Ms. M Msibi

### **Symposium Program Co-Chairs**

- Ms. L Mathebela
- Mr. I Mabuda
- Mr. LN Semakane
- Mr. L Lebea

### **Conveners**

- Prof. Daniel Madyira, University of Johannesburg, South Africa
- Prof. Dawood Desai, Tshwane University of Technology, South Africa
- Dr. Thanyani Pandelani, Council of Scientific and Industrial Research (CSIR), South Africa
- Dr. HM Ngwangwa, University of South Africa, South Africa
- Dr. D Modungwa, Council of Scientific and Industrial Research (CSIR), South Africa

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**For any inquiries, feel free to contact us**

## **ISBEI 2022**

Email: [uberg@unisa.ac.za](mailto:uberg@unisa.ac.za)

[lebealc@unisa.ac.za](mailto:lebealc@unisa.ac.za)

[dmadyira@uj.ac.za](mailto:dmadyira@uj.ac.za)

Tel: +2711 471 2354

+2711 670 9546

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of south africa