

Editorial

# Preface: International Conference on Holography Meets Advanced Manufacturing (HMAM2) <sup>†</sup>

Vijayakumar Anand <sup>1,2,\*</sup> , Amudhavel Jayavel <sup>1</sup> , Viktor Palm <sup>1</sup> , Shivasubramanian Gopinath <sup>1</sup> ,  
Andrei Bleahu <sup>1</sup> , Aravind Simon John Francis Rajeswary <sup>1</sup> , Kaupo Kukli <sup>1</sup> , Vinoth Balasubramani <sup>3</sup> ,  
Daniel Smith <sup>2</sup> , Soon Hock Ng <sup>2</sup>  and Saulius Juodkazis <sup>2,4</sup> 

<sup>1</sup> Institute of Physics, University of Tartu, 50411 Tartu, Estonia; amudhavel.jayavel@ut.ee (A.J.); viktor.palm.001@ut.ee (V.P.); shivasubramanian.gopinath@ut.ee (S.G.); andrei-ioan.bleahu@ut.ee (A.B.); aravind@ut.ee (A.S.J.F.R.); kaupo.kukli@ut.ee (K.K.)

<sup>2</sup> Optical Sciences Center, Swinburne University of Technology, Melbourne 3122, Australia; danielsmith@swin.edu.au (D.S.); soonhockng@swin.edu.au (S.H.N.); sjuodkazis@swin.edu.au (S.J.)

<sup>3</sup> Division of Biological and Environmental Sciences and Engineering, King Abdullah University of Science and Technology (KAUST), Thuwal 23955-6900, Saudi Arabia; vinoth.balasubramani@kaust.edu.sa

<sup>4</sup> Tokyo Tech World Research Hub Initiative (WRHI), School of Materials and Chemical Technology, Tokyo Institute of Technology, Tokyo 152-8550, Japan

\* Correspondence: vijayakumar.anand@ut.ee

<sup>†</sup> All the papers published in the volume are presented at the International Conference on “Holography Meets Advanced Manufacturing”, Online, 20–22 February 2023.

**Abstract:** The CIPHR group, Institute of Physics, University of Tartu, Estonia, and Optical Sciences Center, Swinburne University of Technology, Australia, jointly organized the interdisciplinary online conference “Holography Meets Advanced Manufacturing” during 20–22 February 2023.

**Keywords:** digital holography; incoherent holography; computational imaging; microscopy; diffractive optics; quantitative phase imaging; structured light; tomography; optical security; cryptography; laser beam shaping; metalenses; micro/nanofabrication; femtosecond fabrication; OAM beams; optoelectronic materials and devices; non-diffracting beams; space–time correlations; non-linear optics



**Citation:** Anand, V.; Jayavel, A.; Palm, V.; Gopinath, S.; Bleahu, A.; John Francis Rajeswary, A.S.; Kukli, K.; Balasubramani, V.; Smith, D.; Ng, S.H.; et al. Preface: International Conference on Holography Meets Advanced Manufacturing (HMAM2). *Eng. Proc.* **2023**, *34*, 29. <https://doi.org/10.3390/engproc2023034029>

Published: 24 July 2023



**Copyright:** © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

## 1. Introduction

To develop imaging concepts that go beyond the state-of-the-art, there has been significant collaboration in recent years between the research fields of holography and advanced manufacturing. This was the motivation for organizing the joint international conference between CIPHR group, Institute of Physics, University of Tartu and Optical Sciences Center, Swinburne University of Technology, a world leader in advanced manufacturing technology. The first day of the conference was dedicated to holography; the second day focused on advanced manufacturing; and the third day was devoted to industry applications.

This conference provided a platform for exchanging ideas, interdisciplinary, international collaboration, with three keynote talks from three world-renowned researchers, several invited talks from leading researchers across the globe, poster presentations of students, and industry-ready ideas for industry linkages. The submissions were accepted from the broad areas of holography and advanced manufacturing, which included digital holography, incoherent holography, computational imaging, microscopy, diffractive optics, quantitative phase imaging, structured light, tomography, optical security, cryptography, laser beam shaping, metalenses, micro/nanofabrication, femtosecond fabrication, OAM beams, optoelectronic materials and devices, non-diffracting beams, and space–time correlations and non-linear optics.

The keynote talks were scheduled for 35 min each and 10 min for a question session. The invited talks were scheduled for 15 min each, followed by 5 min for questions, while

the poster presentations were allotted a duration of 10 min each, followed by 2 min for questions. Each day of the conference was divided into three sessions.

All the submissions were processed completely online using the Sciforum platform operated by MDPI. This includes the submission of abstracts, presentation files, and manuscripts, preliminary checks of format and template by event organizers, initial peer review of the submissions by event chairs, full peer review by external international reviewers, submissions of revised versions by the authors, and final checks and acceptance by the reviewers and event chairs. Further checks of compliance to MDPI standards including plagiarism checks were performed by the editors of *Engineering Proceedings*, published by MDPI. All accepted and presented submissions were published in *Engineering Proceedings*. Selected submissions were invited to the Special Issue on “Research in Computational Optics”, organized by Prof. Vijayakumar Anand, Prof. Ravi Kumar, Dr. Andra Naresh Kumar Reddy, and Dr. Vinoth Balasubramani in the MDPI journal *Photonics* (IF=2.536), with APC waivers and special discounts [https://www.mdpi.com/journal/photonics/special\\_issues/B3GWFOP55V](https://www.mdpi.com/journal/photonics/special_issues/B3GWFOP55V) (accessed on 21 July 2023). In the Special Issue, three extended versions of the conference submissions have already been published.

## 2. Conference Organizing Committee

The following committees namely event organizers, event committee and event chairs for the three days are shown in Tables 1–3 respectively. were formed in October 2022 to effectively coordinate the three-day conference, and the event committee frequently met to review the procedures and steps needed to successfully carry out three-day conference.

**Table 1.** Event Organizers.

Sl. No	Name	Position and Affiliations
1.	Aravind Simon J R	Research Manager, CIPHR Group, Institute of Physics, University of Tartu, Estonia
2.	Tiia Lillemaa	Project Manager CIPHR Group, Institute of Physics, University of Tartu, Estonia

**Table 2.** Event Committee.

Sl. No	Name	Position and Affiliations
1.	Prof. Vijayakumar Anand	Associate Professor and ERA Chair Holder, CIPHR Group, Institute of Physics, University of Tartu, Estonia
2.	Dr. Amudhavel Jayavel	Researcher, CIPHR Group, Institute of Physics, University of Tartu, Estonia
3.	Dr. Viktor Palm	Researcher, CIPHR Group, Institute of Physics, University of Tartu, Estonia
4.	Aravind Simon J R	Research Manager, CIPHR Group, Institute of Physics, University of Tartu, Estonia
5.	Tiia Lillemaa	Project Manager, CIPHR Group, Institute of Physics, University of Tartu, Estonia
6.	Andrei-Ioan Bleahu	Junior researcher, CIPHR Group, Institute of Physics, University of Tartu, Estonia
7.	Shivasubramanian Gopinath	Junior Researcher, CIPHR Group, Institute of Physics, University of Tartu, Estonia
8.	Daniel Smith	Junior Researcher, Optical Sciences Center, Swinburne University of Technology, Australia

**Table 3.** Event chairs.

Sl. No	Name	Affiliations
DAY 1		
1.	Prof. Vijayakumar Anand	Associate Professor and ERA Chair Holder, CIPHR Group, Institute of Physics, University of Tartu, Estonia
2.	Dr. Vinoth Balasubramani	Senior researcher at King Abdullah University of Science and Technology (KAUST), Saudi Arabia
DAY 2		
1.	Dr. Soon Hock Ng	Senior researcher at Swinburne University of Technology, Australia
2.	Prof. Kaupo Kukli	Laboratory of Thin Film Technology, Institute of Physics, University of Tartu, Estonia
DAY 3		
1.	Dr. Amudhavel Jayavel	Researcher, CIPHR Group, Institute of Physics, University of Tartu, Estonia
2.	Dr. Viktor Palm	Researcher, CIPHR Group, Institute of Physics, University of Tartu, Estonia

### 3. Invitations and Participants

Approximately 30 leading researchers specializing in computational imaging from around the world received invitations to deliver an invited talk on the first day of the conference. We invited 25 leading researchers in advanced manufacturing to present an invited talk on day two of the conference. Approximately 50 industry members, mostly medical doctors and surgeons, were invited to give presentations on industry applications and their requirements. Several medical doctors and surgeons shared their difficulties in utilizing imaging and characterization tools, as well as features and capabilities they hope to see in the medical equipment and tools in the future. We sent out invitations to attend the conference and give poster presentations to more than 100 universities worldwide, more than 50 companies in Estonia and more than 100 companies globally.

More than 140 participants, including event chairs and organizers (11), keynote speakers (3), opening speakers (3), invited presenters (29), poster presenters (23), and registered participants (95) from different universities, companies, researchers, research scholars, and master's students from across the globe participated in the conference.

### 4. Conference Programme

Day 1 of the conference was dedicated to Holography.

Prof. Vijayakumar Anand started Day 1 of the conference by introducing the online conference on "Holography meets advanced manufacturing". Prof. Toomas Plank, Director of the Institute of Physics, University of Tartu, gave a warm welcome before the opening talk by Prof. Peeter Saari, Professor Emeritus, University of Tartu, on the topic of "Optics in Estonia: Research and Innovation Highlights". Prof. Joseph Rosen from the School of Electrical and Computer Engineering, Ben-Gurion University of the Negev, Israel, delivered the keynote talk on "Advanced Imaging Methods Using Coded Aperture Digital Holography". Three sessions were held. Session 1 had six invited talks, presided over by Session Chair Prof. Vijayakumar Anand and Co-Chair Daniel Smith. Session 2 also featured six invited talks, and was presided over by Session Chair Dr. Vinoth Balasubramani and Co-Chair Andrei Bleahu. Prof. Vijayakumar Anand and Dr. Vinoth Balasubramani presided over Session 3 of the poster presentations. In the poster sessions, eight junior researchers presented their research. In all sessions, the presenters were introduced by the Co-Chairs.

Day 2 of the conference

Prof. Vijayakumar Anand started Day 2 of the conference by giving a brief introduction to the program schedule. Prof. Saulius Juodkazis, Deputy Director of the Optical Sciences Center and Director of Nanotechnology, Swinburne University of Technology, Melbourne, Australia, presented the keynote talk on "Ultra-short laser pulses as material synthesis and lithography tool". Three sessions were held on the second day. Session 1 had five invited talks and was presided over by Session Chair Prof. Vijayakumar Anand and Co-Chair Daniel Smith. Session 2 featured four invited talks and was presided over by Chair Prof. Kaupo Kukli and Co-Chair Andrei Bleahu. Prof. Vijayakumar Anand and Prof. Kaupo Kukli presided over Session 3 of the poster presentations. In the poster sessions, six research scholars presented their work. In all sessions, the presenters were introduced by the Co-Chairs.

Day 3 of the conference

Dr. Amudhavel Jayavel started Day 3 of the conference by introducing the program schedule. Prof. Heli Valtna presented the keynote talk on "Mapping the path from idea to economically scalable application in 3D imaging and sensing". Three sessions were held on the third day. Session 1 had four invited talks from medical doctors and was presided over by Chair Dr. Amudhavel Jayavel, and Co-Chair Andrei Bleahu. Session 2 featured four invited talks and was presided over by Chair Amudhavel Jayavel and Co-Chair Shivasubramanian Gopinath. Dr. Amudhavel Jayavel and Dr. Viktor Palm presided over Session 3 of the poster presentation. In the poster sessions, eight research scholars presented their work. All presentations are available on the YouTube channel CIPHR Talkies, and are permanently stored on the MDPI Sciforum platform.

The following shown in Table 4 is a complete conference schedule, including each speaker's name, the topic they presented, and their affiliations.

**Table 4.** Complete conference schedule.

Day 1: Monday, 20 February 2023 HOLOGRAPHY		
09:00–09:15	Virtual conference window open	
09:15–09:30	Introduction	Prof. Vijayakumar Anand Associate Professor, University of Tartu
09:30–09:40	Welcome note	Prof. Toomas Plank Director, Institute of Physics, University of Tartu
09:40–10:05	Opening talk: “Optics in Estonia: Research and innovation highlights”	Prof. Peeter Saari Professor Emeritus, University of Tartu, Estonia
10:10–10:55	Keynote: “Advanced imaging methods using Coded aperture digital holography”	Prof. Joseph Rosen School of Electrical and Computer Engineering, Ben-Gurion University of the Negev, Israel
Session 1—H1. Holography Chairs: Prof. Vijayakumar Anand and Daniel Smith		
11:00–11:20	Incoherent digital holography for multidimensional motion-picture imaging	Dr. Tatsuki Tahara Senior Researcher, National Institute of Information and Communications Technology (NICT), Japan
11:25–11:45	Synchrotron-FTIR Technique to underpin the future of advanced manufacturing technology and its applications at Australian Synchrotron	Dr. Jitraporn (Pimm) Vongsvivut Senior Beamline Scientist, Australian Synchrotron, Victoria, Australia
11:50–12:10	3D and see-through light-field display using digitally printed holographic screen	Prof. Jackin Boaz Jessie Associate Professor, Kyoto Institute of Technology, Kyoto, Japan
12:15–12:35	Manipulating light with micro and nano-optics and holographic techniques	Prof. Shanti Bhattacharya Professor, Department of Electrical Engineering, IIT Madras, India
12:40–13:00	Digital polarization holography: challenges and opportunities	Prof. Rakesh Kumar Singh Associate Professor, Department of Physics, IIT (BHU), India
13:05–13:25	Information security: an optical approach	Prof. Ravi Kumar Assistant Professor, Department of Physics, SRM University-AP, Andhra Pradesh, India
Session 2—H2. Holography Chairs: Dr. Vinoth Balasubramani and Andrei Bleahu		
13:30–13:50	Role of deep learning in optical imaging	Prof. Inbarasan Muniraj Head of LiFE Lab, Alliance University, Bengaluru, India
13:55–14:15	Sapphire diffractive axicon milled with femtosecond laser ablation for imaging applications	Daniel Smith Poster Presentation Optical Sciences Center, Swinburne University of Technology, Australia
14:20–14:40	Lensless hyperspectral phase retrieval via alternating direction method of multipliers and spectral proximity operators	Dr. Igor Shevkunov Postdoctoral researcher, Tampere University, Finland
14:45–15:05	Quantitative analysis of illumination and detection corrections in adaptive light sheet fluorescence microscopy	Dr. Mani Ratnam Rai Postdoctoral Researcher, NC State University/UNC-Chapel Hill, Raleigh, USA
15:10–15:30	Depth resolved imaging by digital holography via sample-shifting	Prof. Suhas Veetil Associate Professor, School of Engineering Science and Technology at Higher Colleges of Technology, UAE
17:30–17:50	Spin-orbit modal shaping of vortex beams	Prof. Etienne Brasselet Research director, CNRS, Laboratoire Ondes et Matière d'Aquitaine, University of Bordeaux, France
17:55–18:15	Light sheet fluorescence microscopy using incoherent light detection	Prof. Mariana Potcoava Research Assistant Professor, University of Illinois at Chicago, USA

**Table 4.** *Cont.*

Poster Presentations		
Session Chairs: Prof. Vijayakumar Anand and Dr. Vinoth Balasubramani		
15:45–18:00 (10 min for presentation + 2 min for Questions)		
15:45–16:00	Single shot lensless interferenceless phase imaging of biochemical samples using Synchrotron near infrared beam	Molong Han Optical Sciences Center, Swinburne University of Technology, Australia
16:00–16:15	Digital Fourier transform holography using a beam displacer	Mohit Rathor Laboratory of Information Photonics and Optical Metrology, Department of Physics, Indian Institute of Technology, Varanasi, India
16:15–16:30	Field of view enhancement of dynamic holographic displays using algorithms, devices, and systems: A review	Monika Rani CSIR–Central Scientific Instruments Organization, Sector 30C, Chandigarh, 160030, India
16:30–16:45	Holography with incoherent light	Akanksha Gautam Laboratory of Information Photonics and Optical Metrology, Department of Physics, Indian Institute of Technology, Varanasi, Uttar Pradesh, India
16:45–17:00	An asymmetric optical cryptosystem using physically unclonable functions in the Fresnel domain	Vinny Cris M Department of Physics, SRM University-AP, Andhra Pradesh–522502, India
17:00–17:15	Techniques to expand the exit pupil of Maxwellian display: A review	Rajveer Kaur CSIR–Central Scientific Instruments Organization, Sector 30C, Chandigarh, 160030, India
17:15–17:30	Imaging incoherent target using Hadamard basis patterns	Tanushree Karmakar Laboratory of Information Photonics and Optical Metrology, Department of Physics, Indian Institute of Technology, Varanasi, Uttar Pradesh, India
18:15–18:20	Closing Remarks	
Day 2: Tuesday, 21 February 2023 ADVANCED MANUFACTURING		
09:00–09:15	Virtual conference window open	
09:15–09:35	Opening remarks and welcome note	Prof. Vijayakumar Anand Associate Professor, University of Tartu
09:40–10:25	Keynote—Ultra-short laser pulses as material synthesis and lithography tool	Prof. Saulius Juodkazis Deputy Director of Optical Sciences Center and Director of Nanotechnology, Swinburne University of Technology, Melbourne, Australia
Session 1—AM1. Advanced Manufacturing Chairs: Dr. Soon Hock Ng and Daniel Smith		
10:30–10:50	3D auxetic metamaterials as scaffolds for tissue engineering	Prof. Maria Farsari Research Director at FORTH/IESL, Greece
10:55–11:15	Heavy-duty and high-performance 3D micro-optics made by laser additive manufacturing	Prof. Mangirdas Malinauskas Group Leader, Laser Research Center, Vilnius University, Lithuania
11:20–11:40	Femtosecond laser printing of form birefringent polymeric nanostructures	Prof. Vygantas Mizeikis Professor, Department of Engineering and Research Institute of Electronics of Shizuoka University, Japan
11:45–12:05	Knobs for tuning the physical properties of atom-thin graphene layers	Prof. Manu Jaiswal Professor, Department of Physics, IIT Madras, India
12:10–12:30	Efficient generation of higher harmonics from nonlinear metasurfaces and its applications	Dr. Aravind P. Anthur Research scientist, quantum technology for engineering (QTE) department of institute of materials research and engineering (IMRE), A *STAR, Singapore

Table 4. Cont.

Session 2—AM2. Advanced Manufacturing Chairs: Prof. Kaupo Kukli and Andrei Bleahu		
12:35–12:55	The Optical Drill: twisted beams	Dr. Darius Gailevicius Researcher, Faculty of Physics, Laser Research Center, Vilnius University, Lithuania
13:00–13:20	Photon-induced structural and surface engineering for advanced manufacturing of nanoscale material	Dr. Jagadeesh Suriyaprakash Researcher, Guangdong Provincial Key Laboratory of Nanophotonic Functional Materials and Devices, SCNU, China
13:25–13:45	Mirror-less Laser action enabled by Energy Transfer from a conjugated oligomer donor to Chromeno-quinoline acceptor	Prof. Saradh Prasad Researcher, Department of Physics and Astronomy, College of Science, King SAUD University, Saudi Arabia
13:50–14:10	M2 factor of conically refracted Gaussian beams	Dr. Erko Jalviste Researcher, Biophysics Lab of Institute of Physics, University of Tartu, Estonia
Poster Presentations Session Chairs: Prof. Kaupo Kukli and Dr. Soon Hock Ng		
14:30–17:00 (10 min for presentation + 2 min for Questions)		
14:30–14:45	3D scaffolds via Multi-Photon Polymerization as a co-culture system for application in peripheral nervous system regeneration.	Antonis Kordas Institute of Electronic Structure and Laser, Foundation for Research and Technology-Hellas (FORTH-IESL), and Department of Materials Science and Technology, University of Crete, Greece
14:45–15:00	Investigation of Memristor-based neural networks on Pattern recognition	Gayatri Routhu K L Deemed to be University, Andhra Pradesh, India
15:00–15:15	Additive micro-/nano manufacturing of non-sensitized SZ2080TM employing femtosecond-laser VIS-light oscillator	Antanas Butkus Laser Research Center, Faculty of Physics, Vilnius University, Lithuania
15:15–15:30	An efficient designing of IIR filter for ECG signal classification using MATLAB	Manjula Nandi K L Deemed to be University, Andhra Pradesh, India
15:30–15:45	Fabrication and analysis of 3D low THz metamaterials	Savvas Papamakarios Department of Physics, University of Crete and Institute of Electronic Structure and Laser, Foundation for Research and Technology-Hellas (FORTH-IESL), Greece
15:45–16:00	Advanced driver fatigue detection by integration of OpenCV, DNN module and deep learning	Muzammil Parvez M K L Deemed to be University, Andhra Pradesh, India
16:00–16:15	Design and simulation of a low-power and high-speed Fast Fourier Transform for medical image compression	Ernest Ravindran R S K L Deemed to be University, Andhra Pradesh, India
16:15–16:30	Analysis of 22 nm memristor-based inverter and universal gates using ANN model	Kota Bhagya Chandrika K L Deemed to be University, Andhra Pradesh, India
16:30–16:45	Optimization of placement and routing for ALU using reinforcement learning algorithm	Eppala Shashi Kumar Reddy K L Deemed to be University, Andhra Pradesh, India
17:00–17:05	Closing Remarks	
Day 3: Wednesday, 22 February 2023 INDUSTRY APPLICATIONS		
09:00–09:15	Virtual conference window open	
09:15–09:30	Opening remarks	Dr. Amudhavel Jayavel
09:30–09:40	Welcome note	Ms. Tiia Lillemaa
09:40–10:25	Keynote—Mapping the path from idea to economically scalable application in 3D imaging and sensing	Prof. Heli Valtna
Session 1—IA1. Industry Applications Chairs: Dr. Amudhavel Jayavel and Andrei-Ioan Bleahu		
10:30–10:50	New medical imaging: Physics, medical need and commercial viability	Dr. Zoltan Vilagosh RMIT Melbourne and Swinburne universities, Australia
10:55–11:15	Holography and its significance in trauma management and anorectal surgeries—An eye-opener!	Dr. Scott Arockia Singh Chairman and Managing Director in Dr. Scotts Clinic, Nagercoil, Tamil Nadu, India, Consultant Laparoscopic in Dr. Jeyasekharan Hospital, Nagercoil, Tamil Nadu, India

**Table 4.** *Cont.*

11:20–11:40	Imaging pitfalls and diagnostic inhibitions in various imaging modalities of head and neck region	Dr. Durgadevi B Senior Lecturer, Dept of Oral medicine and maxillofacial radiology, Indira Gandhi institute of dental sciences, Sri Balaji vidyapeeth (Deemed) to be University, Pondicherry, India
11:45–12:05	Holography and its clinical implications in Urology—An overview	Dr. Deepak David Consultant, Department of Urology, Dr. Jeyasekharan Hospital and Nursing Home, Nagercoil, Tamil Nadu, India
Session 2—IA2. Industry Applications Chairs: Dr. Amudhavel Jayavel and Shivasubramanian Gopinath		
12:10–12:30	Light for life—Optical spectroscopy in clinical settings	Dr. Shree Krishnamoorthy Researcher at BioPhotonics team with Prof. Stefan Andersson-Engels at Tyndall National Institute in Cork, Ireland
12:35–12:55	Challenges in Burns Management—A Burns Surgeon’s expectation from Modern-day Technology	Dr. Mohammed Imran Khan Consultant and heads the Department of Plastic and Reconstructive Surgery at Grace Kennet Foundation Hospital and Burns Centre, Madurai, India.
13:00–13:20	Cone beam tomography—Challenges and optimization	Prof. Dr. Milling Tania Department of Orthodontics and dentofacial orthopedics Rajas Dental College and Hospital, Kavalkinaru, Tirunelveli, Tamil Nadu, India, Consultant Orthodontist in Darshan Dental and Orthodontic Clinic, Kanyakumari, Tamil Nadu, India
13:25–13:45	Holography in bladder cancer and Renal stones	Dr. Priyadarshini D Jeyasekharan Hospital, Nagercoil, Tamil Nadu, India
Poster Presentations Session Chairs: Dr. Amudhavel Jayavel and Dr. Viktor Palm 14:00–17:00 (10 min for presentation + 2 min for Questions)		
14:00–14:15	Study of a pH-sensitive hologram for biosensing applications	Komal Sharma CSIR-Central Scientific Instruments Organisation, Chandigarh, India and Academy of Scientific and Innovative Research (AcSIR), Ghaziabad, India
14:15–14:30	Enhancing phase measurement by a factor of two in the Stokes correlation	Amit Yadav Laboratory of Information Photonics and Optical Metrology, Department of Physics, Indian Institute of Technology, Varanasi, India
14:30–14:45	Hologram opens new learning door for postgraduate students—An academic view point	Dr. Thivagar M Jayanagar general hospital, Bengaluru, India
14:45–15:00	Design of low-power phase locked loop	Chandra Keerthi Pothina Department of Electronics and Communication, Koneru Lakshmaiah Education Foundation, Guntur India
15:00–15:15	Holographic technology as a new pain-reducing solution for Children	Anneli Kolk Faculty of Medicine, University of Tartu and Department of Pediatrics and Neurology, Tartu University Hospital Children’s clinic
15:15–15:30	Verification of SoC using advanced verification methodology	Pranuti Pamula K L Deemed to be University, Andhra Pradesh, India
15:30–15:45	Correction of focusing errors of a refractive lens Using the Lucy–Richardson–Rosen algorithm	Andrei Bleahu CIPHR Group, Institute of Physics, University of Tartu
15:45–16:00	Implementation of content-based image retrieval using artificial neural networks	Sarath Yenigalla K L Deemed to be University, Andhra Pradesh, India)
16:00–16:15	Design and simulation of a low-power and high-speed Fast Fourier transform for medical image compression	Ernest Ravindran R S K L Deemed to be University, Andhra Pradesh, India
16:15–16:30	Best poster presentations announcement for days 1, 2 and 3	
16:30–16:45	Closing remarks	
<b>End of the conference</b>		

## 5. Proceedings and Certificates

The accepted and presented submissions of 27 articles were published in the MDPI (Multidisciplinary Digital Publishing Institute, Basel, Switzerland) journal *Engineering Proceedings—Eng. Proc.*, 2023, HMAM2 <https://www.mdpi.com/2673-4591/34/1> (accessed on 21 July 2023) [1–27]. Selected submissions were invited to the Special Issue on “Research in Computational Optics” in the MDPI journal *Photonics* (IF–2.536).

Participation e-certificates were given to all the participants online via the Sciforum platform through the following link—Download the participation certificate from the Sciforum <https://hmam2.sciforum.net/-Log> In > My certificates. The e-Certificates were awarded to all the invited speakers, keynote speakers, poster presentations, and winner certificates for poster presentations.

## 6. Materials from the Conference

The materials from the conference are available in the following sections in the Sciforum online platform event, HMAM2—Holography Meets Advanced Manufacturing: Welcome message from the chairs, event calls, event organizers, event chairs, event speakers, sessions, conference schedule, instructions for authors, list of submitted submission, sponsors and partners, poster gallery. <https://hmam2.sciforum.net/>.

## 7. Conclusions

Our three-day online conference on “Holography Meets Advanced Manufacturing (HMAM)” organized by the CIPHR group, Institute of Physics, University of Tartu, Estonia, and the Optical Sciences Center, Swinburne University of Technology, Australia, was successful. The conference gave the CIPHR team opportunities to network with researchers and medical doctors across the globe.

**Author Contributions:** Conceptualization, all the authors; methodology, all the authors; resources, all the authors; writing—original draft preparation, A.S.J.F.R.; writing—review and editing, all the authors; project administration, V.A., A.S.J.F.R., K.K., V.P., A.J. and S.J.; funding acquisition, V.A. and S.J. All authors have read and agreed to the published version of the manuscript.

**Funding:** This conference was funded by European Union’s Horizon 2020 research and innovation programme grant agreement No. 857627 (CIPHR).

**Acknowledgments:** We would like to thank the Institute of Physics, University of Tartu, Estonia, and the Optical Sciences Center, Swinburne University of Technology, Australia, for supporting this event. The authors thank Tiia Lillemaa for her administrative support.

**Conflicts of Interest:** The authors declare no conflict of interest.

## References

1. Boopathi, D. Imaging Pitfalls and Diagnostic Inhibitions in Various Advanced Head and Neck Imaging Modalities—Diagnostician’s Perspective. *Eng. Proc.* **2023**, *34*, 1.
2. Rosen, J. Advanced Imaging Methods Using Coded Aperture Digital Holography. *Eng. Proc.* **2023**, *34*, 2.
3. Tahara, T.; Kozawa, Y.; Nakamura, T.; Matsuda, A.; Shimobaba, T. Incoherent Digital Holography for Multidimensional Motion Picture Imaging. *Eng. Proc.* **2023**, *34*, 3.
4. Yadav, A.; Sarkar, T.; Suzuki, T.; Singh, R.K. Enhancing Phase Measurement by a Factor of Two in the Stokes Correlation. *Eng. Proc.* **2023**, *34*, 4.
5. Gautam, A.; TS, A.; Naik, D.N.; Narayanmurthy, C.S.; Singh, R.; Singh, R.K. Holography with Incoherent Light. *Eng. Proc.* **2023**, *34*, 5.
6. Dodda, V.C.; Muniraj, I. Roles of Deep Learning in Optical Imaging. *Eng. Proc.* **2023**, *34*, 6.
7. Rathor, M.; Chaubey, S.K.; Singh, R.K. Digital Fourier Transform Holography Using a Beam Displacer. *Eng. Proc.* **2023**, *34*, 7.
8. Cris Mandapati, V.; Prabhakar, S.; Vardhan, H.; Kumar, R.; Reddy, S.G.; Sakshi; Singh, R.P. An Asymmetric Optical Cryptosystem Using Physically Unclonable Functions in the Fresnel Domain. *Eng. Proc.* **2023**, *34*, 8.
9. Routhu, G.; Phalguni Singh, N.; Raja, S.; Reddy, E.S.K. Investigation of Memristor-Based Neural Networks on Pattern Recognition. *Eng. Proc.* **2023**, *34*, 9.
10. Singh, R.K. Digital Polarization Holography: Challenges and Opportunities. *Eng. Proc.* **2023**, *34*, 10.

11. Rani, M.; Joshi, N.; Das, B.; Kumar, R. Field of View Enhancement of Dynamic Holographic Displays Using Algorithms, Devices, and Systems: A Review. *Eng. Proc.* **2023**, *34*, 11.
12. Pamula, P.; Gorthy, D.P.; Ngangbam, P.S.; Alagarsamy, A. Verification of SoC Using Advanced Verification Methodology. *Eng. Proc.* **2023**, *34*, 12.
13. Rajveer, K.; Raj, K. Techniques to Expand the Exit Pupil of Maxwellian Display: A Review. *Eng. Proc.* **2023**, *34*, 13.
14. Pothina, C.K.; Singh, N.P.; Prasanna, J.L.; Santhosh, C.; Kumar, M.R. Design of Efficient Phase Locked Loop for Low Power Applications. *Eng. Proc.* **2023**, *34*, 14.
15. Parvez, M.M.; Allanki, S.; Sudhagar, G.; RS, E.R.; Santosh, C.; Mohammed, A.B.; Muqet, M.A. Advanced Driver Fatigue Detection by Integration of OpenCV DNN Module and Deep Learning. *Eng. Proc.* **2023**, *34*, 15.
16. Potcoava, M.; Mann, C.; Art, J.; Alford, S. Light Sheet Fluorescence Microscopy Using Incoherent Light Detection. *Eng. Proc.* **2023**, *34*, 16.
17. Karmakar, T.; Singh, R.; Singh, R.K. Imaging Incoherent Target Using Hadamard Basis Patterns. *Eng. Proc.* **2023**, *34*, 17.
18. Ramaswami Sachidanandan, E.R.; Phalguni Singh, N.; Gunda, S. Design and Simulation of a Low-Power and High-Speed Fast Fourier Transform for Medical Image Compression. *Eng. Proc.* **2023**, *34*, 18.
19. Shevkunov, I.; Katkovnik, V.; Egiazarian, K. Lensless Hyperspectral Phase Retrieval via Alternating Direction Method of Multipliers and Spectral Proximity Operators. *Eng. Proc.* **2023**, *34*, 19.
20. Gailevicius, D.; Zvirblis, R.; Malinauskas, M. Resilient Calcination Transformed Micro-Optics. *Eng. Proc.* **2023**, *34*, 20.
21. Thivagar, M. Hologram Opens a New Learning Door for Surgical Residents—An Academic View Point. *Eng. Proc.* **2023**, *34*, 21.
22. Sharma, K.; Heena; Mohanta, G.C.; Kumar, R. Study of a pH-Sensitive Hologram for Biosensing Applications. *Eng. Proc.* **2023**, *34*, 22.
23. Vilagosh, Z. New Medical Imaging, Physics, Medical Need and Commercial Viability. *Eng. Proc.* **2023**, *34*, 23.
24. Manjula, N.; Singh, N.P.; Babu, P.A. An Efficient Designing of IIR Filter for ECG Signal Classification Using MATLAB. *Eng. Proc.* **2023**, *34*, 24.
25. Yenigalla, S.C.; Rao, S.; Ngangbam, P.S. Implementation of Content-Based Image Retrieval Using Artificial Neural Networks. *Eng. Proc.* **2023**, *34*, 25.
26. Smith, D.; Ng, S.H.; Han, M.; Katkus, T.; Anand, V.; Juodkazis, S. Imaging with Diffractive Axicons Rapidly Milled on Sapphire by Femtosecond Laser Ablation. *Eng. Proc.* **2023**, *34*, 26.
27. Krishnamoorthy, S. Light for Life—Optical Spectroscopy in Clinical Settings. *Eng. Proc.* **2023**, *34*, 27.

**Disclaimer/Publisher's Note:** The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.