

5th Scientific Conference

Rapid Prototyping

**3D & 4D
PRINTING**

in engineering applications

19-20.09.2022



Politechnika Świętokrzyska

WYDZIAŁ MECHATRONIKI I BUDOWY MASZYN



Główny
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Urząd Miasta Kielce



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Conference Agenda

Day 1, 19/09/2022

- 09:00 - 11:00 Registration
- 11.00 – 12.00 Gala Conference Opening

The Chairman of the Scientific Committee - Engineer, PhD. Hab Sławomir Błasiak, Professor of Kielce University of Technology

President, CEO Kielce Trade Fairs – Andrzej Mochoń

Rector of the Technical University of Kielce - Professor Zbigniew Koruba,

Dean of the Faculty of Mechatronics and Machine Design - PhD. Hab. Jakub Takosoglu, Professor of Kielce University of Technology

Professor Grzegorz Budzik - Rzeszów University of Technology

12:00 - 13.30 Industry session, chairman of the session: prof. dr hab. inż. Grzegorz Budzik;
prof. dr hab. inż. Mariusz Oleksy

- BIBUS MENOS Sp. z o.o.
- SYGNIS SA
- LENSO SP. Z O.O.
- SMARTTECH Sp. z o.o.

- 13:30 - 14:45 Lunch break
- 14:45 - 16:15 Scientific session, chairman of the session: dr hab. inż. Sławomir Błasiak prof. PŚk;
prof. dr hab. inż. Lucjan Śnieżek

1. Maciej Cader, **Wojciech Kiński**, Piotr Falkowski, Grzegorz Fiuk, TESTS OF TENSILE STRENGTH OF SAMPLES PRINTED IN DMLS TECHNOLOGY FROM ALSI10MG MATERIAL

2. **Jerzy Bochnia**, Tomasz Kozior, Paweł Szczygieł, Mateusz Musiałek, *Analiza właściwości mechanicznych cienkościennych próbek wykonanych technologią przyrostową FDM.*
 3. **Jerzy Józwik**, Grzegorz Budzik, Mateusz Przytuła, Andrzej Paszkiewicz *Selected problems of the analysis of geometrical surface features of parts manufactured in SLM additive technology.*
 4. **Janusz Kluczyński**, Lucjan Śniezek, Krzysztof Grzelak, Jakub Łuszczek, *Additive manufacturing systems at the Institute of Robots and Machine Design, WIM WAT - technological solutions for the Republic of Poland's Armed Forces and the civil, industrial applications.*
 5. **Mariusz Oleksy**, Kacper Kroczek, Katarzyna Bulanda, Rafał Oliwa, *Poly lactide-hydroxyapatite composites - prospective medical applications.*
 6. **Tomasz Dziubek**, Grzegorz Budzik, Bartłomiej Sobolewski, Konrad Pawłowski, *Integration of CAx systems in the reverse engineering process of a turbocharger rotor.*
 7. **Bogdan Kozik**, Mariusz Dębski, Jadwiga Pisula, *Adhesive joints strength analysis in parts manufactured using rapid prototyping methods.*
- 16:15 - 16:30 Coffee break
 - 16:30 – 17:45 Scientific session, chairman of the session: dr hab. inż. Jerzy Bochnia prof. Półk;
dr hab. inż. Tomasz Dziubek prof. PRz
1. **Małgorzata Zaborniak**, Grzegorz Budzik, Jakub Supel, Izabela Winnicka, *Prospects of using 3D printing in medical engineering.*
 2. **Jacek Bernaczek**, *Analysis of selected strength properties of PMMA.*
 3. **Mariusz Dębski**, Bogdan Kozik, Jadwiga Pisula, *Torsional strength analysis of selected chemically hardening resins in reduced pressure casting method.*
 4. **Paweł Szczygieł**, Jerzy Bochnia, Tomasz Kozior, Krystyna Radoń-Kobus, *Mechanical properties analysis of thermoplastic materials in 3D/4D printing for medical applications.*
 5. **Mateusz Rudnik**, Jerzy Bochnia, Tomasz Kozior, *Selected mechanical properties of hexagonal cell structures produced by 3D printing.*
- 17:45 - 18.00 Coffee break
 - 18.00-19.00 Poster session, chairman of the session: dr inż. Jacek Bernaczek, dr inż. Janusz Kluczyński
1. **Paweł Zmarzły**, *Cylindricity assessment of cast models made with selected additive technologies.*
 2. **Damian Gogolewski**, *Multiscale evaluation of functional surfaces in additive manufacturing for medical applications.*

3. **Tomasz Kozior**, Mateusz Rudnik, Paweł Szczygieł, Jerzy Bochnia, *3D/4D printing - the technology's and materials' progress and future.*
 4. Grzegorz Budzik, **Jerzy Józwik**, Mateusz Przytuła, Andrzej Paszkiewicz, *Monitoring possibilities in the additive manufacturing process using a 3D printer farm.*
 5. **Katarzyna Bulanda**, Mariusz Oleksy, Rafał Oliwa, *Hybrid polymer composites used in rapid prototyping technology.*
 6. **Rafał Oliwa**, Mariusz Oleksy, Katarzyna Bulanda, *Polymer composites in 3D printing technology.*
 7. **Izabela Miechowicz**, Jakub Trzyna, Wiktoria Wojnarowska, *3D printing as an artist's modern work-tool.*
 8. **Jakub Aniulis**, Grzegorz Dudzik, Krzysztof Abramski, *Filament quality monitor for ductile-fibre printing.*
 9. **Łukasz Przeszłowski**, Grzegorz Budzik, Łukasz Kochmański, Ireneusz Chrzan, *Strength analysis of a bracket made in the FFF additive manufacturing technology with topology optimization.*
 10. **Jakub Trzyna**, Izabela Miechowicz, Wiktoria Wojnarowska, *Recycling of support material - a waste in the 3D printing process.*
 11. **Krystyna Radoń-Kobus**, Monika Madej, Paweł Szczygieł, *Assessment of the materials properties in in 3D/4D printing technology for medical applications.*
 12. **Bartłomiej Sobolewski**, Grzegorz Budzik, Tomasz Dziubek, Karol Łopaciński, *Research on a furniture hinge made in additive manufacturing from a thermoplastic material.*
 13. **Katarzyna Piotrowska**, Monika Madej, Krystyna Radoń-Kobus Paweł Szczygieł, *Wpływ nanocząstek miedzi na właściwości poliaktydu PLA do zastosowań w systemach biotribologicznych.*
 14. Vladyslav Andrusyshyn, Vitalii Ivanov, **Sławomir Luściński**, Ivan Pavlenko, *The use of additive technologies in the prototyping of grippers.*
 15. Małgorzata Zaborniak, **Grzegorz Budzik**, Łukasz Kochmański, Kacper Kondrat, *Selected aspects of additive manufacturing technologies in spare parts production for the automotive industry.*
 16. **Wojciech Bębacz**, Paweł Andrzej Łaski, *Rapid prototyping of pneumatic proportional valves.*
- 20:00 Gala dinner (Tęczowy Młyn Hotel)

Day 2, 20/09/2022

- 10:00 - 12:00 Academic session (online), chairman of the session: dr inż. Tomasz Kozior, dr inż. Łukasz Przeszłowski
1. **Andrea Ehrmann**, Guido Ehrmann, Tomasz Błachowicz, *Smart textiles from 3D printed shape memory polymers - a review.*
 2. **Zdenek Joska**, Jakub Horníček, Tomáš Dražan, Adam Švásta, Zdenek Pokorný, David Dobrocký, *3D printing possibilities for the production of components and parts for the military.*
 3. **Maximilian Kroll**, *Additive Manufacturing of hybrid structures.*
 4. Menuja Suriyathasan, Hannah Brodermanns, Marc Neumann, **Lilia Sabantina**, *Preliminary sewing studies and determination of the optimal needle size for 3D printing/textile composites prepared using FFF printing technology.*
 5. Tomasz Kozior, **Al Mamun**, Jiri Hajnys, Michaela Klöcker, Lilia Sabantina, *Analysis of the orientation of nanofibers fabricated with needle-free and needle-based electrospinning technologies and coated onto 3D-printed free-form composites manufactured with FFF, PJM, and SLM technologies.*
 6. **Muammel M. Hanon**, László Zsidai, *The tribological characteristics of 3D printed polymers and polymer composites.*
 7. **Murni Balqis Hashim**, Pawel Szczygiel, Tomasz Kozior, Nik Farid Nik Ismail, Azman Senin, *Inspecting the effect of tensile properties on Malaysia sheepskin nappa leather on garment sewability design.*
 8. **Mohd Shahneel Saharudin**, Ahmad Ilyas Rushdan, Islam Shyha, Fawad Inam, *MXene-based composites for 3D printing applications.*
 9. **Wiktor Zawrocki**, Maciej Jędraszak, *Increasing the strength of filaments for 3D printing by graphene blending.*
- 12:00 - 12:15 Coffee break (**Scientific Committee meeting**)
 - 12:15 – 14:00 Scientific session, chairman of the session: dr hab. inż. Paweł Zmarzły prof. PŚk, dr inż. Damian Gogolewski
1. **Jakub Łuszczek**, Lucjan Śnieżek, Krzysztof Grzelak, Janusz Kluczyński, Harsh Mehta, Maximillian Kroll, *The implementation methodology for innovative materials in selective laser melting technique.*
 2. **Maciej Gołaszewski**, Maciej Tabiszewski, Roman Grygoruk, *BioCloner - Polish first 3D bio-printer dedicated to absorbable implants.*
 3. Grzegorz Budzik, Tomasz Dziubek, Bartłomiej Sobolewski, **Małgorzata Gontarz**, *Analysis of material consumption in the shell-wheels production with the use of MEX methods.*
 4. **Mateusz Musiałek**, Jerzy Bochnia, Damian Gogolewski, *Analysis of the influence of technological parameters on selected mechanical properties of thin-walled elements produced with the FDM additive technology.*

5. **Wiktor Szot**, Jerzy Bochnia, Paweł Zmarzły, *Stress relaxation assessment of models made with FDM additive manufacturing technology from flexible material.*
 6. **Natalia Kowalska**, Sławomir Błasiak, Michał Skrzyniarz, Łukasz Nowakowski, *Finishing influence on selected geometrical sizes of elements made of PLA in FDM technology.*
- 14:00 - 14:30 - end of the conference
 - 14:30 - 15:30 Lunch

*The A1/A0 sheet format is obligatory for the poster session.
Presentation time - 15 minutes.*