

MANUFACTURING A BETTER FUTURE

SCIENTIFIC REPORT

2018-2023

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This book was made possible through the financial support of the Fundação para a Ciência e a Tecnologia (FCT), via the CDRSP Base Funding project (DOI: 10.54499/UIDB/04044/2020) and Programatic Funding (DOI: 10.54499/UIDP/04044/2020).

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Photography: Rafael Melo Tavares, Popdigit

Layout and pagination design: Popdigit

Printing and finishing: Brindicis

ISBN: 978-989-36128-0-4

DOI: 10.25766/q4v7-vp61

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Polytechnic of Leiria

Marinha Grande, Portugal

March, 2024



FOREWORD

This Scientific Report is part of its aims at presenting the main results and outputs to the Portuguese Foundation for Science and Technology (FCT) as part of the R&D Units Evaluation 2023/2024, referring to the period of 2018-2023. It is structured into 4 main parts:

PART A – GENERAL INFORMATION

This section integrates the mission and aims fo the CDRSP, it's dedicated facilities and main laboratories.

PART B – PERFORMANCE INDICATORS

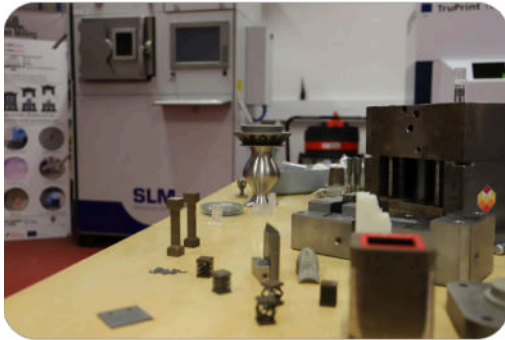
This section refers to the main outputs and indicators, such as the centre's main achievements, outputs and publications.

PART C – PROTOTYPES AND SOFTWARE TOOLS

This section presents some of the prototypes and software tools develops during the period under assessment.

PART D – SUMMARY

In the last section, a synthesis of the main results and outputs is presented. These are also compared and discussed with those from the previous assessment period.



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PART A

GENERAL INFORMATION

1 INTRODUCTION

1.1 Mission

The Centre for Rapid and Sustainable Product Development (CDRSP) of the Polytechnic of Leiria (IPL) is a leading research center with the mission of contributing to scientific and technological development through new products, materials and processes that are more sustainable, effective, and efficient.

The CDRSP is an organic research unit of the IPL. It was founded in May 2007 to promote economic competitiveness, social cohesion, and sustainable development through new, more efficient, and sustainable products, materials, and processes. Portuguese Additive Manufacturing Initiative (PAMI) was a project that finished in 2021 and CDRSP was the leader. PAMI was a network for fundamental research and development of new techniques for additive manufacturing. The PAMI network was part of the National Roadmap of Research Infrastructures of Strategic Interest to foster an intelligent distribution of the excellent infrastructures that already exist in the central region of Portugal, with different areas of specialty (mechanics, materials, biomedical, and electronics) to increase competitiveness and the capacity to fix the high-performance production sector.

Since 2021, CDRSP is part of the Advanced Production and Intelligent Systems (ARISE) Associated Laboratory (AL). ARISE is an association of five R&D Units, interfacing public entities of 3 Universities – Coimbra, Minho, and Porto, through the R&D Units CEMMPRE, ISR-C, ISISE, SYSTEC – and one Higher Education institution – Polytechnic Institute of Leiria, through CDRSP. The ARISE AL brings together around 240 integrated PhD researchers articulating fundamental and applied sciences and technologies from Computation, Material, Management and Information Technologies Sciences, with key very diverse branches of Engineering – Civil,

Electrical and Computing, Biomedical and Mechanical – yielding in this way a proper synergistic context and unique position to contribute to: 1) training and promotion of highly qualified scientific employment and attract international talent to Portugal, while 2) responding to key national and international public policies addressing social, environment, and economic challenges for which Production Technologies for Process and Product industries, Manufacturing, Built Environment and Habitat, Materials and Components, Information and Communication Systems, Energy and Mobility, as well as Economy of the Sea, Health, Agriculture, and Forestry, play a key role with emphasis on the comprehensive Reindustrialization and Decarbonization of the National Economy. To efficiently pursue the above objectives, the ARISE AL is organized in the following five intertwined thematic lines: new materials and components; advanced production systems and processes; sustainable energy systems; intelligent systems and robotics, and digital ecosystem, sustainability, risk, and management.

Research, advanced training, and consultancy services are essential areas that complement the CDRSP's strategy. The CDRSP's activities cover diverse areas, but it has focused much of its work on the additive manufacturing, processing, and characterization of new materials for applications in engineering fields like mechanical, biomedical, automotive, aeronautics, and civil. This center is effectively growing in the number of research projects, technical reports, scientific papers, and books, among others. This growing process has been supported by the entry of new members and new scholarship holders as a strategy to increment internal skills and competencies.

The CDRSP is currently involved in several national and international research projects. In addition to all these projects, the CDRSP has built a strong relationship with international research institutes and companies, thus contributing to upgrading the technological status of Portuguese companies. The CDRSP's work is also marked by the establishment and/or strengthening partnerships with other research centers and laboratories of national universities and technology centers.

1.2 CDRSP graphical overview

The aim of the strategic research programme 2018–2023 was to consolidate and reinforce the national and international position of the CDRSP as a leading research group in the field of Direct Digital Manufacturing based on Additive Manufacturing (AM), as illustrated in Figure 1, moving towards the fully integrated concept of added-value manufacturing. This was possible due to the multidisciplinary nature of the CDRSP Research Team, comprising researchers from different scientific backgrounds. The main Scientific Research Areas of CDRSP lays on AM, having a focus on 60% of applied research and 40% of basic research. To do so, AM is supported by 3 core interconnected scientific pillars: (i) mathematical and computational methods (ii) Advanced materials; and (iii) innovative manufacturing processes.

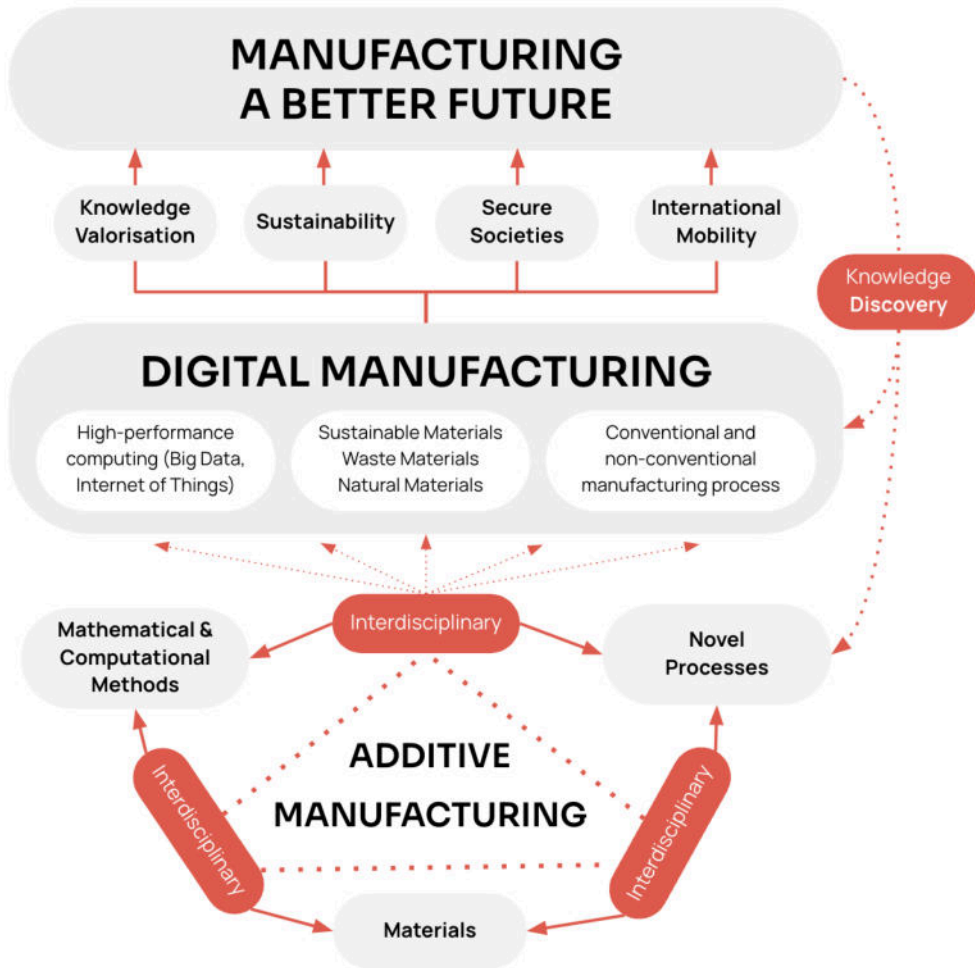


Figure 1: Interdisciplinary CDRSP's research pillars in additive manufacturing that supports the cutting-edge broad area (direct digital manufacturing) for manufacturing a better future to the society.

2 FACILITIES

2.1 New CDRSP building

On January 2016, the CDRSP moved to a new research infrastructure (Figure 2) supported by the Centre Regional Coordination and Development Commission (CCDR-C, Governmental body) and funded by Portugal and European Union (EU). The new building has an area of 2000 m² located in a land area of 8070 m².

CDRSP facilities are split over two floors, where, on the ground floor, are located 12 laboratories, namely: the Materials Chemistry, the Materials Characterization, the Cellular Culture, the Biofabrication, the Multiscale Modelling and Reverse Engineering, the Direct Digital Manufacturing: Metal, the Direct Digital Manufacturing: Polymers/Composites, the Direct Digital Manufacturing: Ceramics, the Mechanical.

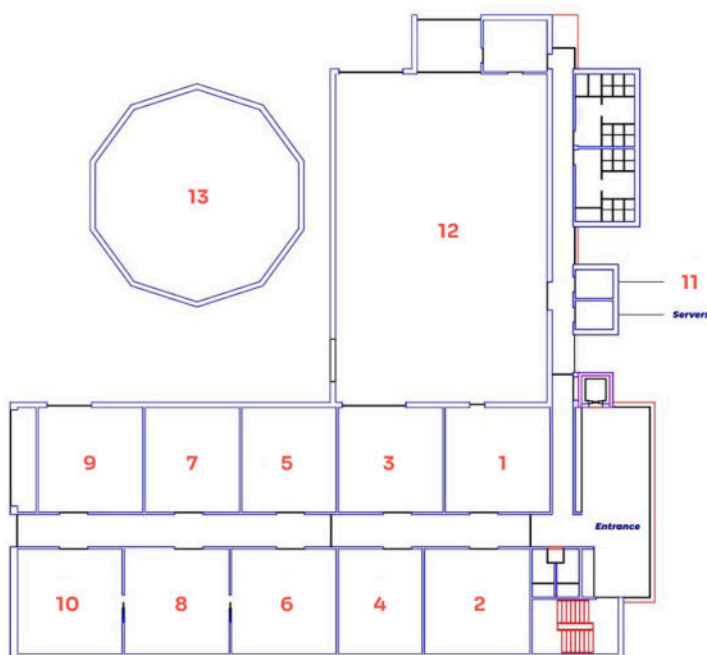


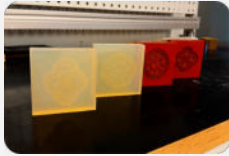
Figure 2: CDRSP facilities.



1 Direct Digital Manufacturing
(Ceramics and Glass)



2 Reverse Engineering
(Multiscale)



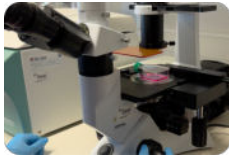
3 Mechanical Technology Lab (LTM)



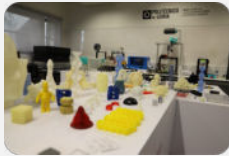
4 Biofabrication



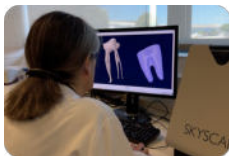
5 Structure and Morphology



6 Cell Culture and Tissue Engineering



7 Direct Digital Manufacturing
(Polymers and Composites)



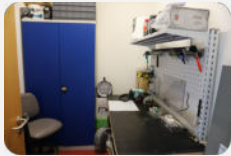
8 Materials Characterization



9 Direct Digital Manufacturing (Metals)



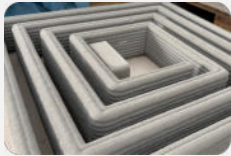
10 Materials Chemistry



11 Develop and Systems Engineering (LDES)



12 Manufacturing Technologies



13 Print.Big

Technology, the Structure and Morphology, the BigPrint and, a Training Factory. On the first floor are located the library, open space rooms used for meetings and research forums, two dedicated meeting rooms, a small auditorium, several research offices and one administrative office.

CDRSP building is near significant stakeholders and partners, like the CENTIMFE – Technological Center for the Mould and Special Tools Industry, the OPEN Business Incubator, and Crisform – a Professional Training Center for the Crystal Industry. Its location materializes an existing ecosystem for an effective technology transfer between companies and the CDRSP, thus enhancing early contacts with dedicated technological startups.

2.2 CDRSP Laboratories

All CDRSP laboratories, equipped with state-of-the-art technologies, are used daily by the researchers to accomplish the CDRSP mission and pursue the scientific strategy. All these laboratories are aligned with the CDRSP's research goals since these laboratories are complementary and allow the development of innovative and sustainable new products, processes, and materials. Additive Manufacturing technologies (polymers, metals, and ceramics) are available in several laboratories to support the multidisciplinary research developed in CDRSP applied in different domains such as: mechanical engineering, civil engineering, material science, mathematics/computer science, biomechanics, biomedical science, physics and bioengineering. The laboratories have a wide range of top-level equipment's operated by qualified users that have been crucial to reach the outputs produced.

The Materials Chemistry laboratory is equipped with the general laboratory equipment to prepare materials, blends and perform material synthesis. The Materials Characterization laboratory is equipped with several techniques to perform different characterization such as thermal, physical, chemical and mechanical (DSC, STA, FTIR, SEM-EDX, Tensiometer, uCT, UV/Vis spectroscopy, Texturometer). The Cell Culture laboratory has available two flow chambers, one CO₂ incubator, an inverter optical microscope, a confocal microscope and a fluorometer. The Biofabrication laboratory is equipped with several home-made systems resulting from several projects developed with companies and academic partners, which have been crucial to pursue the CDRSP scientific strategy and to be recognized worldwide by peers. The systems available are BIOMATE, Bioextruder, Dual-Bioextruder, Multimaterial STL and electrospinning apparatus. The Multiscale Modelling and Reverse Engineering laboratory is equipped with a number of systems such as: Fringe projection system, the BioCAD system, the ThermoDiCOM and the CERAMICS MM Toolbox. The Direct Digital Manufacturing laboratories (polymer, metal, and ceramics) are equipped with numerous equipment namely, two SLM system, nine 3D printers (FDM, SLS, extrusion). Mechanical Technology laboratory is a more classic laboratory, but essential to perform the analysis of the mechanical and physical properties of several materials. BigPrint laboratory was recently established to manufacture large-scale sustainable products using additive manufacturing technologies from concrete, ceramic and polymeric

materials. The Training Factory is currently the largest laboratory on the CDRSP, and it replicates a real-life factory to support industrial partners to test and implement differentiating technologies, as more significant, it is possible to refer to the machining center, the CMM equipment, extruder and injection molding machine. CDRSP also has simulation software solutions, programming and computer modelling capabilities to carry out computational analysis and Reverse Engineering. Table 1 presents a more extensive list of equipment that can be found in CDRSP laboratories.

Table 1: Main equipment at CDRSP laboratories.

Laboratory	Main Equipment
<p>Multiscale Modelling and Reverse Engineering</p>	<ul style="list-style-type: none"> • Fringe projection system (COMET 5) • Qualisys Miquis 3 • OptiTrack Flex 13 Target3D • Force Plate FP4060 • CMM arm with 5 degree of freedom • Haptic device system • Thermographic camera • Large scale rotate scanning system • Artec Leo • Laser strip projection system (home-made) • Finge projection system (home-made) • BioCAD system (home-made) • ThermoDiCOM (home-made) • CERAMICS MM Toolbox (home-made) • Computer-aided design • Solidworks • Magics Materialise • Computer-aided engineering • ANSYS • ABAQUS • Moldex 3D • Other software tools • Python • C++ • Plotter Roland Soljet Pro III XC-540
<p>Direct Digital Manufacturing</p>	<ul style="list-style-type: none"> • AM4COMPOSITES System (home-made) • PolyJet desktop 3D printer, Objet30 Prime • VFLASH system FTI 230 • uPRINT system P51786 • Zcorp mono-color system • 3D Touch 3D Printer (triple head) (BTB) • UP! System • BFB System • SLM Solutions GmbH 125HL • Ceramic extrusion system (home-made)

Table 1 (cont.): Main equipment at CDRSP laboratories.

Laboratory	Main Equipment
<p>Cell Culture and Tissue Engineering</p>	<ul style="list-style-type: none"> • Laminar flow hoods • CO₂ incubator • Centrifuge system • Bath system • Refrigerator (4°C); Freezers (-20°C; -80°C) • Criopreservation system • Confocal Microscopy (LSM900, Zeiss) • Inverted optical microscope • Fluorescence Microplate Reader, FLUOstar Omega • Microplate reader, Easy Reader 400, biochrom
<p>Direct Digital Manufacturing</p>	<ul style="list-style-type: none"> • AM4COMPOSITES System (home-made) • PolyJet desktop 3D printer, Objet30 Prime • uPRINT system P51786 • Piocreat G5 • Flashforge Creator3 and Guider IIs • Hello Bee Prusa (home-made) • Anycubic Photon • FDM Delta Printer (home-made) • Zcorp mono-color system • UP! System • BFB System • SLM Solutions GmbH 125HL • Venticell Eco Line • SLM TruPrint 1000 Trumpf • Ceramic extrusion system (home-made) • Ceramic Woven Ceramifor EB500 • Coating Quorum • DDM 4glass (home-made) • FDM CreatBot F430 • DLP - foto 9.25 6k - Resine Flashforge, 6k • Binder Jetting Zprinter • Box Ceramics - amcubed • Duet 3D ceramics
<p>Materials Chemistry</p>	<ul style="list-style-type: none"> • Analytical weighing scale, Kern – ABS and Sartorius • pH meter, SCANSCI 901 • Orbital shaker, IKA • Freeze dryer, Telstar Lyoquest, with vacuum pump • Magnetic stirrer/heating plate, lkarts, Argolab, Rslab, Agimatic, Nahita • Ultrasonic Disintegrator (sonicator), UP 200 Ht • Roller mixer, RS LAB • Eppendorf ThermoMixer, Labnet • Vertical rotator, Grant-bio • Orbital shaker with rollers, RS LAB • Digital ultrasonic bath with temperature, ARGO LAB • Plasma beam, Electronic Diener

Table 1 (cont.): Main equipment at CDRSP laboratories.

Laboratory	Main Equipment
<p>Materials Characterization</p>	<ul style="list-style-type: none"> • Optical microscope, Micros, Daffodil MCX100 • Spectroscopy IR – FTIR-ATR – Alpha-P, Bruker • Spectroscopy UV/Vis – plate reader with cuvette port, NanoAbsorbance, SPECTROstar • Tensiometry/Contact angle – Optical Tensiometer model Theta • Simultaneous Thermal Analysis (STA) – STA 6000, Perkin Elmer • Differential Scanning Calorimetry (DSC) – DSC 214-Polyma, Netzsch • Thermal conductivity – LM. PLUS 305 • Melting flow index (MFI) – Ray-Ran MFI • Micro computed tomography (Micro CT) – SkyScan 1174v20 • Scanning electron microscopy (SEM) and energy-dispersive x-ray (EDX) spectroscopy – Vega 3, Tescan • Texturometer – TA. XT plus C • Vacuum sputter coater – Sputter Coater SC7620 • Dynamic Light Scattering (DLS), Zetasizer Pro, Malvern • Colony counter CC-1, Boeco Germany • Electrophoresis apparatus • System with Blue Light Illumination Base, SmartDoc 2.0, Accuris
<p>Mechanical Technology Training Factory</p>	<ul style="list-style-type: none"> • AM LASAR system (home-made) • High Speed CNC Machining System(50000rpm) • Double-screw extruder • Injection system, 130 tonnes • Co-injection system • Micro-injection system • Compression moulding unit • Water-assisted injection moulding unit • Large vacuum chamber machine • Reaction injection moulding (RIM) system • Infusion system • NylonRIM system (home-made) • High frequency head CNC machine • Environmental chamber • Drilling equipment • Grinding equipment • Reaction-injection moulding • Micro-injection system • Infusion system • Vacuum casting system • Injection equipment – 20 tones • Co-injection system • Compression moulding system • Water-assisted injection moulding system • Double-screw extruder • Sintering woven for metals • Collaborative robot

Table 1 (cont.): Main equipment at CDRSP laboratories.

Laboratory

Main Equipment

Mechanical Technology Training Factory

- AM LASAR system (home-made)
- High Speed CNC Machining System(50000rpm)
- Double-screw extruder
- Injection system, 130 tonnes
- Co-injection system
- Micro-injection system
- Compression moulding unit
- Water-assisted injection moulding unit
- Large vacuum chamber machine
- Reaction injection moulding (RIM) system
- Infusion system
- NylonRIM system (home-made)
- High frequency head CNC machine
- Environmental chamber
- Drilling equipment
- Grinding equipment
- Reaction-injection moulding
- Micro-injection system
- Infusion system
- Vacuum casting system
- Injection equipment - 20 tones
- Co-injection system
- Compression moulding system
- Water-assisted injection moulding system
- Double-screw extruder
- Sintering woven for metals
- Collaborative robot

BigPrint

- Robotic Arm Kuka
- Concrete extrusion arm (home-made)
- Mortar Automatic Mixer
- Film electrospinning

Biofabrication

- BIOMATE System (home-made)
- Bioextruder (home-made)
- Dual-bioextruder (home-made)
- Multimaterial stereo-thermal-lithography (home-made)
- Electrospinning system (home-made)
- FAB@HOME system

3 RESEARCH TEAM

CDRSP is a multidisciplinary group engaging 19 PhD integrated members (Table 2), 8 PhD collaborator members (Table 3), and several PhD and MSc students covering the following domains:

- Bioengineering
- Biomedical Science
- Civil Engineering
- Industrial Design
- Materials Science
- Mathematics/Computer Science
- Medical Science
- Mechanical Engineering
- Polymer Engineering

Table 2: PhD integrated members

Name	PhD domain
António Mário Pereira	Mechanical Engineering
Candida Malça	Mechanical Engineering
Carlos Capela	Mechanical Engineering
Fábio Simões	Mechanical Engineering
Florindo Gaspar	Civil Engineering
Henrique Almeida	Mechanical Engineering
Joana Valente	Biochemistry
Joel Vasco	Polymer Engineering
Juliana Dias	Biomedical Science
Marcelo Gaspar	Mechanical Engineering
Nelson Martins-Ferreira	Mathematics/Computer Science
Nuno Alves	Mechanical Engineering/Computer Vision
Paula Faria	Mathematics/Biomedical Science
Paulo Novo	Mechanical Engineering

Table 2 (cont.): PhD integrated members

Name	PhD domain
Pedro Carreira	Mechanical Engineering
Pedro Martinho	Polymer Engineering
Rui Ruben	Mechanical Engineering
Sanda Amado	Biomaterials/Physiotherapy
Tatiana Patrício	Biomedical Engineering
Ana Lisboa	Management/Entrepreneurship
Carla Moura	Bioengineering
David Ângelo	Medical Science
Fátima Barreiros	Materials Science
Fernando Batista	Mechanical Engineering
Geoffrey Mitchell	Materials Science
Jorge Siopa	Mechanical Engineering
João Matias	Polymer Engineering
Luis Coelho	Mechanical Engineering
Luis Prola	Civil Engineering
Maria António Castro	Biomaterials/Physiotherapy
Maria Leopoldina Alves	Mechanical Engineering
Mário Correia	Mechanical Engineering
Miguel Reis Silva	Mechanical Engineering
Milena Vieira	Mechanical Engineering
Ruben Pereira	Biomedical Science
Vitor Ferreira	Management/Entrepreneurship

PART B

PERFORMANCE INDICATORS

4 MAIN ACHIEVEMENTS

Doctoral programme: In 2019, a new joint PhD, a partnership with University of Minho, in Direct Digital Manufacturing for Polymer and Tooling Industries was submitted to the Portuguese Agency for Assessment and Accreditation of Higher Education (Agência de Avaliação e Acreditação do Ensino Superior - A3ES). This Doctoral programme started in 2022. This PhD programme was designed to respond to the challenges of industry digitalisation (Industry 4.0) through Direct Digital Manufacturing.

PAMI: The Centre coordinates a major Scientific Infrastructure (PAMI) of the National Roadmap of Research Infrastructures of Strategic Relevance. PAMI includes more than 150 researchers from several institutional partners, namely CDRSP, University of Coimbra, Institute of Systems and Robotics, The Centre for Neuroscience and Cell Biology (CNC), Pedro Nunes Institute, and the Technological Centre for the Mouldmaking, Special Tooling and Plastic Industries.

ARISE: Since 2021, CDRSP is part of Advanced Production and Intelligent Systems (ARISE) Associated Laboratory. ARISE is an association of five R&D Units, interfacing public entities of 3 Universities – Coimbra, Minho and Porto, through the R&D Units CEMMPRE, ISR-C, ISISE, SYSTEC – and one Higher Education institution – Polytechnic Institute of Leiria, through CDRSP.

International Research Projects: The Centre was also engaged in several national and international projects, namely:

- INOV.AM - Innovation in Additive Manufacturing (<https://inov.am/en/>);
- RN21 - Innovation in the Natural Resin Sector to Strengthen the National Bioeconomy;
- BioShoes4All - Innovation and training in the footwear sector for a sustainable bioeconomy;
- Packaging of the Future, more ecological, inclusive and digital;
- Sustainable Stone by Portugal - Valuing natural stone for a digital, sustainable and qualified future;
- 4DComposites - Pre-impregnated fabric thermoplastic matrix composites incorporating actuators;
- Add.additive: Adding additive manufacturing to Portuguese industry;

- MATIS - Sustainable industrial materials and technologies;
- 4ADDITIVE - Implementing advanced additive manufacturing systems in Portuguese industry: systems, tools, software and training;
- PAC - Portugal AutoCluster for the future;
- ADDITool - Platform for the dissemination and transfer of additive manufacturing technologies in the tooling sector in the SUDOE region;
- ADDISPACE - Platform for the dissemination and transfer of additive manufacturing technologies in the aerospace sector in the SUDOE region;
- CIRCULARSEAS - Transforming ocean plastic waste into environmentally friendly products for maritime industries|Interreg Atlantic Area Program;
- Add.Powder - New filaments based on metal powders for additive manufacturing;
- @AM.PPT - Additive manufacturing of large fiber composite parts;
- Eco4fibers - Plant-based thermal insulation materials;
- EcoPlast - Eco-sustainable composite materials to replace conventional plastics;
- DigitalSTONE - Direct digital manufacturing approach for the mass production of bespoke, high-value stone-based products;
- PREDICTOS - Strengthening excellence for advanced osteosarcoma's predictive models;
- AM4CER - Additive manufacturing for industrial ceramics.

International and National Conferences: The Centre organised several editions of International and National Conferences. CDRSP is engaged in twelve International and National Networks and Associations to explore knowledge and promote researchers' mobility between different organisations and countries, namely Portuguese Additive Manufacturing Initiative (PAMI); European Network of Mathematics for Industry and Innovation (EU-MATHS-IN) through the Portuguese node PT-MATHS-IN from the Portuguese Mathematical Society (SPM); International Society of Biomechanics in Sports (ISBS); Global Alliance of Rapid Prototyping Associations (GARPA); European Sustainable Energy Innovation Alliance (ESEIA); Global Business and Technology Association (GBATA); European Association for Innovation and Technologies and Applied Research (EURAFITAR); Portuguese Society of Biomechanics (SPB); American Marketing Association (AMA); Portuguese Institute For Quality (IPQ); Production Technologies Cluster (PRODUTECH); and the Cluster of Engineering & Tooling Competitiveness (POOL-NET).

5 PUBLICATIONS

5.1 Books

SUMMARY:

2018	2019	2020	2021	2022	2023	Total
6	1	1	3	1	1	13

2018

1. Mitchell, G., Faria-Pascoal, P. (2018). Rosin – an untapped green resource for the future for Portugal. IPL - CDRSP Knowledge Series (vol.3). ISBN: 978-972-8793-55-5.
2. Mitchell, G., Faria-Pascoal, P. (2018). XESA – X-Ray Experimental Structural Analysis for Polymers. IPL - CDRSP Knowledge Series (vol.4). ISBN: 978-989-96765-3-4.
3. Mitchell, G., Faria-Pascoal, P. (2018). MESA – Molecular Editor for Structural Analysis Reference Manual. IPL - CDRSP Knowledge Series (vol.5). ISBN: 978-989-96765-6-5.
4. Mitchell, G. (2018). Scattering Methods for Polymer Orientation Characterisation. Springer.
5. Mitchell, G. (2018). Nanoenhancers for Plastics. Pan Stanford. ISBN: 978-981-4411-52-3.
6. Fernandes P.R., Tavares, J. M. R. S., Folgado, J., Quental, C., Ruben, R. B. (2018). Book of abstracts of the 15th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering and 3rd Conference on Imaging and Visualization, CMBBE2019. ISBN: 978-989-99424-5-5.

2019

1. Silva, G., Ferreira, M. P., Ferreira, V., Trovão, C. (2019). Estudo do estado da arte do empreendedorismo, Projeto Empreender Leiria. NERLEI Associação Empresarial da Região de Leiria.
(<http://empreenderleiria.pt/publicfiles/zroiuxgenog7svj6qse42tdabt4drpjslo2fapig.pdf>)

2020

1. Rodrigues, H., Gaspar, F., Fernandes, P., Mateus, A. (2020). Sustainability and automation in smart construction - Proceedings of the International

Conference on Automation Innovation in Construction (CIAC-2019). Springer. ISBN: 978-3-030-35533-3 (eBook).

(<https://doi.org/10.1007/978-3-030-35533-3>)

2021

1. Pereira, A. M., Simões, F. J. P., Sá, J. C., Ferreira, I., Martinho, P. G. (2021). International Conference on Quality, Innovation and Sustainability – ICQIS2020- Book of Abstracts. Polytechnic of Leiria - School of Engineering and Management. ISBN: 978-989-54819-2-7.

(https://icqis.ipleiria.pt/files/2021/04/ICQIS2020_book_of_abstracts.pdf)

2. Rodrigues, H., Gaspar, F., Fernandes, P., Mateus, A. (2021). Sustainability and Automation in Smart Constructions: Proceedings of the International Conference on Automation Innovation in Construction (CIAC-2019). Springer International Publishing. ISBN: 978-3-030-35532-6.

(<https://doi.org/10.1007/978-3-030-35533-3>)

3. Capela, C., Correia, M., Ruben, R. B. (2021). Livro de Resumos do 12^o Congresso Nacional de Mecânica Experimental, CNME2020. ESTG, Leiria. ISBN: 978-972-8415-06-8.

(<https://doi.org/10.25766/vnbn-a964>)

2022

1. Almeida, H., Vasco, J., Marto, A., Capela, C., Craveiro, F., Bártolo, H., Coelho, L., Correia, M., Vieira, M., Ruben, R. B. (2022). Progress in Digital and Physical Manufacturing: Proceedings of ProDPM'21. Springer Nature. ISBN: 978-3-031-33892-2.

(<https://doi.org/10.1007/978-3-031-33890-8>)

2023

1. Encarnação, T., Pais, A. C. (2023). Marine Organisms: A Solution to Environmental Pollution? Springer. ISBN: 978-3-031-17225-0.

(<https://link.springer.com/book/10.1007/978-3-031-17226-7>)

5.2 Book chapters

SUMMARY:

2018	2019	2020	2021	2022	2023	Total
8	6	8	13	2	9	46

2018

1. Amado, S., Morouço, P., Faria, P., Alves, N. (2018). Tailoring Bioengineered Scaffolds for Regenerative Medicine. In: Biomaterials in Regenerative Medicine. InTech.
2. Campodoni, E., Patricio, T., Montesi, M., Tampieri, A., Sandri, M., Sprio, S. (2018). Biom mineralisation process generating hybrid nano and micro-carriers. In: Core-Shell Nanostructures for Drug Delivery and Theranostics. Woodhead Publishing.
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7. Morouço, P. (2018). The usefulness of direct digital manufacturing for biomedical applications. In: Intensification of Biobased Products. Royal Society of Chemistry.
8. Zhgun, A., Gaspar, F., Rodrigues, H. (2018). Pathology of Stone Masonry Buildings: A Case Study at the Batalha Monastery. In: Masonry: Design, Materials and Techniques. Nova Science Publishers. ISBN: 978-1-53614-532-8.

2019

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2. Coelho, A. S., Pinho, J. C. M. R., Lisboa, A. (2019) In: *Entrepreneurial Orientation and Dynamic Capabilities*. 2019. ISBN: IGI Global.
3. Ferreira, V., Mendes, H. (2019). *Leadership and Organization Innovation adoption - a case study*. In: *Handbook of Research on Entrepreneurship, Innovation, and Internationalization*. IGI Global. ISBN: 978-1-52-258479-7.
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2020

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3. Fernandes, S. R., Mamede de Carvalho, Pereira, M., Cavaleiro Miranda, P. (2020). *Non-invasive Spinal Cord Stimulation: Relevance of Modelling Studies in Clinical Protocol Design*. In: *Brain and Human Body Modeling*.
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2021

1. Annappa, V., Gaspar, F., Mateus, A., Vitorino, J. (2021). 3D Printing for Construction Using Stone Sludge. In: Sustainability and Automation in Smart Constructions. Advances in Science, Technology & Innovation (IEREK Interdisciplinary Series for Sustainable Development). Springer, Cham.
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(https://doi.org/10.1007/978-1-0716-2176-9_10)
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5. Conceição, P. R., Peleija, A., Martins, J. P., Portugal, J., Neves, C. B., Franco, M., Alves, N. (2021). Fit accuracy of RPD framework produced by CAD-CAM—pilot clinical trial. In: Advances and Current Trends in Biomechanics. Taylor & Francis Group. ISBN: eBook 9781003217152.
6. Costa, J., Portugal, J., Neves, C. B., Franco, M., Alves, N., Santos, C., Bettencourt, A. (2021). Structural characterization of a chlorhexidine delivery system based on relene resins. In: Advances and Current Trends in Biomechanics. Taylor & Francis Group. ISBN: eBook 9781003217152.
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(https://doi.org/10.1007/978-3-030-35533-3_9)
11. Martinho, P. G. (2021). Rapid manufacturing and tooling. In: Design and Manufacturing of Plastics Products - Integrating Traditional Methods With Additive Manufacturing. Elsevier.
12. Miranda-Oliveira, P., Correia, D., Vieira, M., Ruben, R. B., Fernandes, O. (2021). Influence of the gender in the rotational shot-put, in Athletics' elite athletes. In: Advances and Current Trends in Biomechanics. CRC Press. ISBN: 978-1-032-10806-3.
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(https://doi.org/10.1007/978-3-030-35533-3_36)

2022

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2. Coelho, A. S., Lisboa, A. e Pinho, J. C. M. (2022). Entrepreneurial Orientation and Dynamic Capabilities: The Case of Family Firms. In: Research Anthology on Strategies for Maintaining Successful Family Firms. IGI Global.
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2023

1. da Silva, D. P., Faria, P., Mateus, A., Silva, R., Ruivo, T., Mitchell, G. R. (2023). Changing the Paradigm in Design for 3D printing - Morphology Mapping. In: Design for 3D printing. Springer.
2. da Silva, D. P., Holt, J. J., Pratumshat, S., Pascoal-Faria, P., Mateus, A., Mitchell, G. R. (2023). Crystallization from Anisotropic Polymer Melts. In: Polymer Crystallization: Methods, Characterization and Applications. Wiley Online Library.
(<https://doi.org/10.1002/9783527839247.ch10>)
3. Encarnação, T., Campos, M. G., Mateus, A. (2023). Introduction: Environmental Pollution and Biotechnological Solutions. In: Marine Organisms: A Solution to Environmental Pollution? Uses in Bioremediation and in Biorefinery. Springer.
(https://link.springer.com/chapter/10.1007/978-3-031-17226-7_1)
4. Encarnação, T., Ramos, P., Mohammed, D., McDonald, J., Lizzul, M., Nicolau, N., Campos, M. G., Sobral, A. J. F. N. (2023). Bioremediation Using Microalgae and Cyanobacteria and Biomass Valorisation. In: Marine Organisms: A Solution to Environmental Pollution? Uses in Bioremediation and in Biorefinery. Springer.
(https://link.springer.com/chapter/10.1007/978-3-031-17226-7_2)
5. Marques, A. L. R., Biscaia, S., Massano, A., Tavares, R. M., Mateus, A. (2023). Sustainable Direct Digital Manufacturing Using Marine Resources. In: Marine Organisms: A Solution to Environmental Pollution? Springer Cham. ISBN: 978-3-031-17225-0.
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6. Pais, A. A. C. C., Encarnação, T. (2023). Conclusion: Environmental Protection—Our Common Responsibility. In: Marine Organisms: A Solution to Environmental Pollution? Uses in Bioremediation and in Biorefinery. Springer.
(https://link.springer.com/chapter/10.1007/978-3-031-17226-7_13)
7. Pattanashetti, N., Mitchell, G. R., Kariduraganavar, M. Y. (2023). Polyurethans for Scaffolds. In: ACS Book Polurethanes Preparation, Properties and Applications. ACS.
8. Singh, P., Kaleemunnisa, F. N. U., Encarnação, T. (2023). Marine Bacteria for Biofertilizers. In: Marine Organisms: A Solution to Environmental Pollution? Uses in Bioremediation and in Biorefinery. Springer.
(https://link.springer.com/chapter/10.1007/978-3-031-17226-7_9)
9. Singh, P., Kaleemunnisa, F. N. U., Encarnação, T. (2023). Genetic Modification: A Gateway to Stimulate the Industrial Production of Biofuels. In: Marine Organisms: A Solution to Environmental Pollution? Uses in Bioremediation and in Biorefinery. Springer.
(https://link.springer.com/chapter/10.1007/978-3-031-17226-7_11)

5.3 Journal special issues

SUMMARY:

2018	2019	2020	2021	2022	2023	Total
1	2	4	4	7	7	25

2018

1. Mitchell, G., Mahendra, V., Sousa, D. (2018). Special issue on Biopolymers Based on Rosin. Current Research in Biopolymers.

2019

1. Mitchell, G., Alves, N., Mateus, A., Kariduraganavar, M. (2019). Special issue on Direct Digital Manufacturing and Polymers. Advanced Materials Research.
2. Mitchell, G. (2019). Special issue on Polymers and Polymer Structures for 4D Direct Digital Manufacturing. Polymers.

2020

1. Alves, N., Dias, J., Gloria, A. (2020). Special issue on Polymeric Materials for Biomedical Applications. Polymers.
2. Alves, N., Valente, J. (2020). Special issue on Additive manufacturing approaches to produce drug delivery systems. Pharmaceutics.
3. Mitchell, G., Duraccio, D., Alves, N. (2020). Special issue on Polymer Morphology during Manufacturing. Polymers.
4. Ruben, R. B., Silva, J. V. L, Audenaert, E. A. (2020). Medical Imaging for Design and Biomechanical Optimisation of Personalised Medical Devices. Frontiers in Bioengineering and Biotechnology.

(<https://www.frontiersin.org/research-topics/10583/medical-imaging-for-design-and-biomechanical-optimisation-of-personalised-medical-devices>)

2021

1. Fu, L., Mitchell, G.R. (2021). Polymer Hybrid Materias Design and Applications. Polymers.
2. Magalhães, F. D., Mitchell, G. R., Otero, M., Covas, J. A. (2021). Special Issue on State-of-the-Art Polymer Science and Technology in Portugal. Polymers.
3. Pascoal-Faria, P. (2021). Frontiers in Materials - Mechanics of Materials. Frontiers.
4. Pascoal-Faria, P. (2021). Journal of Functional Biomaterials. Journal of Functional Biomaterials.

2022

1. Alves, N., Dias, J., Gloria, A. (2022). Polymeric Materials for Biomedical Applications. *Polymers*.
2. Mitchell, G. R., Alves, N., Moura C., Coutinho, J. (2022). *Materiais 2023. Materials Proceedings*.
3. Mitchell, G. R., Alves, N., Kariduraganavar, M. Y. (2022). Developments in Direct Digital Manufacturing. *Journal of Manufacturing and Manufacturing Processes*.
4. Mitchell, G. R., Pascoal-Faria, P. Curto, J. M. R. (2022). Developments in Polymer Science and Composites. *Polymers*.
5. Mitchell, G., Ryu, S., Caggiano, A., Radovitzky, R. A., Trovalusci, P., Pugno, N. (2022). *Frontiers Material Science*.
6. Pascoal-Faria, P. (2022). *Applied Mathematics and Statistics – Mathematical Biology. Frontiers*.
7. Valente, J. F. A., Alves, N. (2022). Additive manufacturing approaches to produce drug delivery systems Vol I. *Pharmaceutics*.

2023

1. Alves, N., Dias, J., Gloria, A. (2022). Polymeric Materials for Biomedical Applications. *Polymers*.
2. Mitchell, G. R., Alves, N., Moura C., Coutinho, J. (2022). *Materiais 2023. Materials Proceedings*.
3. Mitchell, G. R., Alves, N., Kariduraganavar, M. Y. (2022). Developments in Direct Digital Manufacturing. *Journal of Manufacturing and Manufacturing Processes*.
4. Mitchell, G. R., Pascoal-Faria, P. Curto, J. M. R. (2022). Developments in Polymer Science and Composites. *Polymers*.
5. Mitchell, G., Ryu, S., Caggiano, A., Radovitzky, R. A., Trovalusci, P., Pugno, N. (2022). *Frontiers Material Science*.
6. Pascoal-Faria, P. (2022). *Applied Mathematics and Statistics – Mathematical Biology. Frontiers*.
7. Valente, J. F. A., Alves, N. (2022). Additive manufacturing approaches to produce drug delivery systems Vol I. *Pharmaceutics*.

Ongoing

1. Dias, J., Alves, N. (ongoing). *Advances in Electrospun Technology and Polymer Material. Polymers*.
2. Dias, J., Longoni, A., Oliveira, A. L. (ongoing). *Advances in biofabrication for skin regeneration: Volume II. Frontiers In Bioengineering and Biotechnology*.
3. Mitchell, G. R. (ongoing). *Selected Papers from Chemeet 2022. Batteries*.
4. Mitchell, G. R., Elbestawi, M. A., (Ongoing). *Additive Manufacturing. Journal of Manufacturing and Manufacturing Processes*.

5. Mitchell, G., Chen, W. (ongoing). Operando and in-situ measurements during Manufacturing Processes. Journal of Manufacturing and Manufacturing Processes.
6. Morgado, T., Pereira, A. M., Lampreia, S. (ongoing) Fracture & Failure Prevent: Reliability, Proactivity and Practice.
7. Mota, C., Mateus, A., Dias, J., Patrício, T. (Ongoing). Special Issue "Biobased Polymers: Design, Synthesis and Applications". Polymers, MDPI.
8. Ruben, R. B., Carvalho, M., Trabelsi, O. (ongoing). Biomechanics Analysis in Tissue Engineering. MDPI in Bioengineering.
(https://www.mdpi.com/journal/bioengineering/special_issues/1SBAVWV44P)
9. Valente, J. F. A., Alves, N. (ongoing). Additive manufacturing approaches to produce drug delivery systems Vol III. Pharmaceutics.
10. Valente, J. F. A., Sousa, F. (Ongoing). Progress and Innovation on Nanosystems for gene therapy. Pharmaceutics.

5.4 International journal papers

SUMMARY:

2018	2019	2020	2021	2022	2023	Total
27	65	32	45	46	39	254

Year	Q1	Q2	Q3	Q4	others	Total
2018	17 (63%)	6	2	1	1	27
2019	19 (29%)	11	4	30	1	65
2020	21 (66%)	10	1	0	0	32
2021	27 (60%)	14	3	0	1	45
2022	24 (52%)	12	5	0	5	46
2023	19 (49%)	16	1	2	1	39
2018-2023	127 (50%)	69	16	33	9	254

2018

1. Ângelo, D.F., Gil, F.M., González-García, R., Mónico, L., Sousa, R., Neto, L., Caldeira, I., Moura, C., Francisco, L.C., Sanz, D., Alves, N., Salgado, F., Morouço, P. (2018). Effects of bilateral discectomy and bilateral discopexy on black Merino sheep rumination kinematics: TEMPOJIMS – phase 1 – pilot blinded, randomized preclinical study. *Journal of Cranio-Maxillo-facial Surgery*, Elsevier, 46, 2, 346-355.
(<https://doi.org/10.1016/j.jcms.2017.11.022>)
2. Ângelo, D.F., Monje, F., Gonzalez, R., Morouco, P., Alves, N., Salvado, F. (2018). Black Merino Sheep: suitable animal model for temporomandibular joint interposal material research. *Annals of Medicine*, Taylor & Francis, Ltd., 50, Supp 1, S87-S88.
(<https://doi.org/10.1080/07853890.2018.1427460>)
3. Ângelo, D.F., Morouço, P., Gil, F.M., Mónico, L., González-García, R., Sousa, R., Neto, L., Caldeira, I., Smith, M., Smith, S., Sanz, D., Santos, F.A., Pinho, M., Carrapiço, B., Cavaco, S., Moura, C., Alves, N., Salvado, F., Little, C. (2018). Preclinical randomized controlled trial of bilateral discectomy versus bilateral discopexy in Black Merino sheep temporomandibular joint: TEMPOJIMS –

- Phase 1- histologic, imaging and body weight results. *Journal of Cranio-Maxillo-facial Surgery*, Elsevier, 46, 4, 688-696.
(<https://doi.org/10.1016/j.jcms.2018.01.006>)
4. Araújo, A., Barbeiro, S., Ghalati, M.K. (2018). Convergence of an explicit iterative leap-frog discontinuous Galerkin method for time-domain Maxwell's equations in anisotropic materials. *Journal of Mathematics in Industry*, Springer, 8, 1, 1-16.
(<https://doi.org/10.1186/s13362-018-0051-6>)
 5. Augusto, A., Dias, J.R., Campos, M.J., Alves, N.M., Pedrosa, R., Silva, S.F. (2018). Influence of *Codium tomentosum* Extract in the Properties of Alginate and Chitosan Edible Films. *Foods*, MDPI, 7, 4, 53.
(<https://doi.org/10.3390/foods7040053>)
 6. Auriemma, F., De Rosa, C., Di Girolamo, R., Malafronte, A., Scoti, M., Mitchell, G.R., Esposito, S. (2018). Time-resolving study of stress-induced Transformations of Isotactic Polypropylene through Wide-Angle X-Ray Scattering Measurements. *Polymers*, MDPI, 10, 2, 162.
(<https://doi.org/10.3390/polym10020162>)
 7. Bakatovich, A., Davydenko, N., Gaspar, F. (2018). Thermal insulating plates produced on the basis of vegetable agricultural waste. *Energy & Buildings*, Elsevier, 180, 72-82.
(<https://doi.org/10.1016/j.enbuild.2018.09.032>)
 8. Buciumeanu, M., Almeida, S., Bartolomeu, F., Costa, M.M., Alves, N., Silva, F.S., Miranda, G. (2018). Ti6Al4V cellular structures impregnated with biomedical PEEK - New material design for improved tribological behavior. *Tribology International*, Elsevier, 119, 157-164.
(<https://doi.org/10.1016/j.triboint.2017.10.038>)
 9. Daulbayev, C., Mitchell, G., Zakhidov, A., Sultanov, F., Mansurov, Z. (2018). Obtaining of Biologically Soluble Membranes Based on Polymeric Nanofibres and Hydroxyapatite of Calcium. *Eurasian Chemico-Technological Journal*, Al-Farabi Kazakh National University, 20, 2, 119-124.
(<https://doi.org/10.18321/ectj690>)
 10. Dias, J.R., Baptista-Silva, S., Sousa, A., Oliveira, A.L., Bártolo, P.J., Granja, P.L. (2018). Biomechanical performance of hybrid electrospun structures for skin regeneration. *Materials Science and Engineering: C*, Elsevier, 93, 816-827.
(<https://doi.org/10.1016/j.msec.2018.08.050>)
 11. Fernandes, S.R., Salvador, R., Wenger, C., de Carvalho, M., Miranda, P.C. (2018). Transcutaneous spinal direct current stimulation of the lumbar and sacral spinal cord: a modelling study. *Journal of Neural Engineering*, IOP Publishing, 15, 3, 036008.
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 12. Gaspar, F., Cruz, H., Gomes, A. (2018). Evaluation of glue line shear strength of laminated timber structures using block and core type specimens. *European Journal of Wood and Wood Products*, Springer, 76, 2, 413-425.

(<https://doi.org/10.1007/s00107-017-1217-4>)

13. Gray, J.R.A., Martins-Ferreira, N. (2018). New exactness conditions involving split cubes in protomodular categories. *Theory and Applications of Categories*, 33, 33, 1031-1058.
(<http://www.tac.mta.ca/tac/volumes/33/33/33-33.pdf>)
14. Horta, J.F., Simões, F.J.P., Mateus, A. (2018). Large scale additive manufacturing of eco-composites. *International Journal of Material Forming*, Springer, 11, 375-380.
(<https://doi.org/10.1007/s12289-017-1364-5>)
15. Mahendra, V., Kariduraganavar, M.Y., Pattanashetti, N.A., Mitchell, G.R. (2018). The Coconut Tree - A Source of Sustainable Polymeric Materials. *United Journal of Biochemistry and Biotechnology*, United Prime Publications, 1, 1, 1-6.
(<http://hdl.handle.net/10400.8/8450>)
16. Malça, C., Santos, C., Sena, M., Mateus, A. (2018). Development of SLM cellular structures for injection molds manufacturing. *Science and Technology of Materials*, Elsevier, 30, 1, 13-22.
(<https://doi.org/10.1016/j.stmat.2018.03.001>)
17. Martins-Ferreira, N., Montoli, A., Sobral, M. (2018). The Nine Lemma and the push forward construction for special Schreier extensions of monoids with operations. *Semigroup Forum*, Springer, 97, 2, 325-352.
(<https://doi.org/10.1007/s00233-018-9962-1>)
18. Melo-Fonseca, F., Lima, R., Costa, M.M., Bartolomeu, F., Alves, N., Miranda, A., Gasik, M., Silva, F.S., Miranda, G. (2018). 45S5 BAG-Ti6Al4V structures: The influence of the design on some of the physical and chemical interactions that drive cellular response. *Materials and Design*, Elsevier, 160, 95-105.
(<https://doi.org/10.1016/j.matdes.2018.08.056>)
19. Miragoli, M., Ceriotti, P., Iafisco, M., Vacchiano, M., Salvarani, N., Alogna, A., Carullo P., Ramirez-Rodríguez G.B., Patrício T., Degli Esposti L., Rossi F., Ravanetti F., Pinelli S., Alinovi R., Erreni, M., Rossi, S., Condorelli, G., Post, H., Tampieri, A., Catalucci, D. (2018). Inhalation of peptide-loaded nanoparticles improves heart failure. *Science translational medicine*, AAAS, 10, 424, ean6205.
(<https://doi.org/10.1126/scitranslmed.aan6205>)
20. Mitchell, G.R., Olley, R.H. (2018). Orthogonal Templating Control of the Crystallisation of Poly(ϵ -Caprolactone). *Polymers*, MDPI, 10, 3, 300.
(<https://doi.org/10.3390/polym10030300>)
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32. Pereira, M.J., Santos, T., Correia, R., Amaral, J.S., Amaral, V.S., Fabbri, S., Albertini, F. (2023). Mapping the magnetocaloric effect at the microscale on a

- ferromagnetic shape memory alloy with infrared thermography. *JPhys Materials*, IOP Publishing, 6, 024002.
(<https://doi.org/10.1088/2515-7639/acc13b>)
33. Marcelino, P., Silva, J.C., Moura, C.S., Meneses, J., Cordeiro, R., Alves, N., Pascoal-Faria, P., Ferreira, F.C. (2023). A Novel Approach for Design and Manufacturing of Curvature-Featuring Scaffolds for Osteochondral Repair. *Polymers*, MDPI, 15, 9, 2129.
(<https://doi.org/10.3390/polym15092129>)
 34. Reis, T., Barbosa, C., Franco, M., Batista, C., Alves, N., Castelo-Baz, P., Martin-Cruces, J., Martin-Biedma, B. (2023). Root Canal Preparation of a Commercial Artificial Tooth versus Natural Tooth—A MicroCT Study. *Applied Sciences*, MDPI, 13, 16, 9400.
(<https://doi.org/10.3390/app13169400>)
 35. Ryu, S., Mitchell, G.R., Caggiano, A., Radovitzky, R.A., Trovalusci, P., Pugno, N.M. (2023). Editorial Innovators in Mechanics Metamaterials. *Frontiers in Materials*, Frontiers, 10.
(<https://doi.org/10.3389/fmats.2023.1346034>)
 36. Santos, T., Belbut, M., Amaral, J., Amaral, V., Ferreira, N., Alves, N., Pascoal-Faria, P. (2023). Insights into Temperature Simulation and Validation of Fused Deposition Modeling Processes. *J. Manuf. Mater. Process*, MDPI, 7, 6, 189.
(<https://doi.org/10.3390/jmmp7060189>)
 37. Santos, T., Ramani, M., Devesa, S., Batista, C., Franco, M., Duarte, I., Costa, L., Ferreira, N., Alves, N., Pascoal-Faria, P. (2023). A 3D-Printed Ceramics Innovative Firing Technique: A Numerical and Experimental Study. *Materials*, MDPI, 16, 18, 6236.
(<https://doi.org/10.3390/ma16186236>)
 38. Silva, G.M., Dias, Á.L., Lisboa, A., Silva, F.P. (2023). Drivers and outcomes of sustainable export marketing strategies in international environments. *Review of International Business and Strategy*, Emerald, 33, 4, 627-648.
(<https://doi.org/10.1108/RIBS-05-2022-0056>)
 39. Trambitski, Y., Kizinievič, O., Gaspar, F., Kizinievič, V., Valente, J. F. A. (2023). Eco-friendly unfired clay materials modified by natural polysaccharides. *Construction and Building Materials*, Elsevier, 400, -, 132783.
(<https://doi.org/10.1016/j.conbuildmat.2023.132783>)

5.5 National journal papers

SUMMARY:

2018	2019	2020	2021	2022	2023	Total
-	2	1	3	2	3	11

2019

1. Silva, D.P., Silva, R.J.G., Mateus, G.N.S., Mateus, A.J.S., Carreira, P.J.S., Santos, C. (2019). Uma solução híbrida integrada de elevado nível criptográfico para autenticação de produtos. *O Molde*, 105, 63–65.
2. Silva, S., Couto, F., Almeida, M. L., Malça, C., Parreira, P., Apóstolo, J., Cruz, A. (2019). Use of three types of walkers: impact on the functional performance profile of institutionalized older adults. *Revista de Enfermagem*, 22, 139–148.
(doi.org/10.12707/RIV19043)

2020

1. Faria, P. (2020). Quando a Matemática é Rainha! *Gazeta da Sociedade Portuguesa de Matemática*, 191, 51.
(gazeta.spm.pt/getArtigo?gid=1557)

2021

1. Conceição, P.R., Franco, M., Alves, N., Portugal, J. and Neves, C.B. (2021). Fit accuracy of removable partial denture metal frameworks produced by CAD-CAM – a clinical study. *Sociedade Portuguesa de Estomatologia e Medicina Dentária*, 62(4), 194–200.
(doi.org/10.24873/j.rpemd.2021.12.851)
2. Brun, F., Vitorino, J.; Gouveia, L., Diz, F., Loureiro, R., Barbeiro, R.; Mateus, A., Gaspar, F. (2021). Tecnologia de impressão 3D para a construção – o banco Bloom. *Construção Magazine*, 106.
3. Gouveia, L., Florindo, G. (2021). Projeto Add.Additive, o conceito Bloom. *InforNOV*, 8, 26.

2022

1. Mateus, A., Silva, R., Mendes, M., Mendes, L. (2022). ADAPTIVE.SURFACES – Geração de Superfícies Adaptativas na Indústria de Moldes e EOAT (End of arm tooling). *Robótica*, 33(126), 12–14.
2. Gouveia, L., Diz, F., Gaspar, F., Alves, N. (2022). In-Mold Decoration Process – O caso de estudo do Projeto WoodShape 4.0. *O Molde*, 133, 60–62.

2023

1. Novo, P.J., Mateus, A. Silva, M.L., Coutinho, M.A., Silva, R., Carreira, P., Martinho, P.G., Batista, C., Esfandiari, P., Silva, J.F., Gil, A., Rodrigues, D., Santos, C. (2023). Fabricação Aditiva de peças de elevadas dimensões com materiais poliméricos reforçados com fibras. *O Molde*, 131, 61-77.
2. Correia, M.S., Ruben, R.B. (2023). Evaluation of the effect of the building position on the mechanical behaviour of components produced by additive manufacturing - material extrusion. *Revista Mecânica Experimental, APAET*, 36, 75-85.
3. Jorge, H., Silva, R., Pereira, D., Luís, J., Gouveia, L., Domingues, J., Patrício, M., Marinheiro, J., Rondão, I., Francisco, V., Lima, P., Oliveira, M., Mateus, A. (2023). Inovação da tecnologia de fabrico aditivo para louça cerâmica – o contributo do projeto AM4CER. *Revista TÉCNICA*, 21.

5.6 Conference proceedings

SUMMARY:

2018	2019	2020	2021	2022	2023	Total
37	28	21	34	55	52	227

2018

1. Almeida, D.F., Ruben, R.B., Fernandes, P.R., Folgado, J., Verhegghe, B., De Beule, M. (2018). From ct-scan to finite element analysis for a patient-specific hip arthroplasty. 8th World Congress of Biomechanics, July 8-12, Dublin, Ireland.
2. Almeida, D.F., Ruben, R.B., Folgado, J., Fernandes, P.R., Verhegghe, B., De Beule, M. (2018). Hexahedral finite element mesh generation for total hip arthroplasty analysis. 15th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering and 3rd Conference on Imaging and Visualization - CMBBE2018, Mar 26-29, Lisbon, Portugal. (ISBN: 978-989-99424-5-5)
3. Bialosau, A., Bakatovich, A., Gaspar, F. (2018). Materiais Compósitos para Isolamento Térmico de Matérias Primas Naturais e Aglutinantes Minerais. Proceedings do 3º Congresso Luso-Brasileiro Materiais de Construção Sustentáveis, Coimbra, Portugal. (ISBN: 978-989-20-8148-9)
4. Biscaia, S., Branco, M., Viana, T., Franco, M., Moura, C., Malça, C., Morouço, P. (2018). Reinforcing extruded-based poly(ϵ -caprolactone) scaffolds with cellulose nanofibers. Proceedings of the 8th World Congress of Biomechanics, July 8-12, Dublin, Ireland.
5. Clérigo, S., Gaspar, F., Fernandes, P. (2018). Experimental Evaluation of the Strength of Ceramic Masonry with Notch Joints. Proceedings of the 42nd IAHS WORLD CONGRESS, The housing for the dignity of mankind, Naples, Italy. (ISBN: 978-88-9326-210-1)
6. Cunha, J., Vitorino, J., Mateus, A. (2018). Development of smart projectiles for multi-dimensional water-assisted injection moulding. International Conference on Polymers and Moulds Innovations (PMI2018), Sep 19-21, Guimarães, Portugal. (ISBN: 978-989-20-8809-9)
7. Dias, J.R., Baptista-Silva, S., Sousa, A., Alves, N., Oliveira, A.L., Bártolo, P.J., Granja, P.L. (2018). Hybrid electrospun wound dressings for skin regeneration. ESB2018 - 29th European Conference on Biomaterials, Maastricht, Netherlands.
8. Dias, P.A.N., Mesquita, C., Henriques, M., Galhano, C., Veloso, A., Malça, C., Morouço, P., Seabra, I.J. (2018). Extraction of cellulose microfibrils from corncob waste for innovative biomedical applications. Proceedings of the 5th International ISEKI_Food Conference, July 3-5, Stuttgart, Germany.
9. Feijó, S., Ruben, R.B., Correia, M.S., Almeida, H., Campos, C.A. (2018). Tracheobronchial stents accommodation analysis. 15th International

Symposium on Computer Methods in Biomechanics and Biomedical Engineering and 3rd Conference on Imaging and Visualization – CMBBE2018, Mar 26-29, Lisbon, Portugal. (ISBN: 978-989-99424-5-5)

10. Ferreira, A.S., Jesus, C., Galvão, S., Moura, C., Morouço, P., Malça, C., Mendes, F. (2018). Easy blood crossmatch – making crossmatch easy. Proceedings of the 19th Annual NATA Symposium on Patient Blood Management, Haemostasis and Thrombosis (NATA 2018), April 12-13, Lisbon, Portugal.
11. Ferreira, V. (2018). Assessing Industry 4.0. Readiness-the Case of Portugal. 18th GBATA - Global Business and Technology Association International Conference Proceedings, July, Thailand.
12. Forte, P., Marinho, D.A., Morais, J.E., Morouço, P., Pascoal-Faria, P., Barbosa, T.M. (2018). Aerodynamics of a wheelchair sprinter racing at the 100m world record pace by CFD. AIP Conference Proceedings, July, AIP Publishing LLC.
13. Gonçalves, L., Gaspar, F., Gonçalves, A. (2018). Análise Comparativa de Diferentes Dados Laser Scanning na Documentação e Modelação 3D do Património Edificado. Proceedings of 7th Euro-American Congress on Construction Pathology, Rehabilitation Technology and Heritage Management (REHABEND 2018), May 15-18, Cáceres, Spain. (ISBN: 978-84-697-7033-7)
14. Israel, R., Gaspar, F., Veludo, J. (2018). Inspeção e Caracterização das Coberturas com Estrutura de Madeira do Centro Histórico de Leiria. Proceedings of 7th Euro-American Congress on Construction Pathology, Rehabilitation Technology and Heritage Management (REHABEND 2018), May 15-18, Cáceres, Spain. (ISBN: 978-84-697-7033-7)
15. Lisboa, A., Skarmees, D. (2018). Balancing Market and New Product Development Capabilities to Export Performance: Direct and Moderating Effects. AMA Global Marketing SIG Special Conference, Santorini, Greece, American Marketing Academy.
16. Malça, C., Sena, M., Santos, C., Mateus, A., Alves, N. (2018). Numerical modeling of mechanical and thermal behaviors of cellular structures produced by SLM, AIP Conference Proceedings, July, AIP Publishing LLC.
17. Martins-Ferreira, N., Ferreira, L., Pascoal-Faria, P., da Silva Cruz, L.A., Assunção, P., Alves, N. (2018). A method for automatic detection of rectangular regions of interest in arbitrary images. AIP Conference Proceedings, July, AIP Publishing LLC.
18. Morouço, P., Amado, S., Santos-Rocha, R., Branco, M., Pina, C., Malça, C., Seabra, I. (2018). 2bio4cartilage: prevenção e tratamento aliados contra a osteoartrite. Proceedings of 3º Congresso de Envelhecimento Ativo: Exercício Físico e Saúde, Mar 8-9, Viseu, Portugal.
19. Morouço, P., Biscaia, S., Carreira, P., Mateus, A., Alves, N. (2018). Multi-material bioprinter for zonal cartilage constructs with functionalised bioactive hydrogels. ICRS 2018 – 14th World Congress Macau, Apr 9-14, Macau, China.
20. Novo, P.J., Nunes, J.P., Silva, J.F., Marques, A.T. (2018). Compression Molding of Pultruded Carbon Reinforced Thermoplastic Composites. Proceedings of

- 18th European Conference on Composite Materials, ECCM18, June 24-28, Athens, Greece.
21. Oliveira, L., Neves, D., Farinha, T., Malça, C. (2018). Tree fault analysis on Fuzzy and Stochastic tools to optimize the fault prediction process to aid the new challenges of Industry 4.0. Proceedings of the International Conference on Project Management (ProjMAN 2018), Nov 21-23, Lisbon, Portugal.
 22. Pascoal-Faria, P., Cunha, J., Mateus, A., Alves, N., Marques, R., Venkat, A., Silva, R., Mitchell, G. (2018). Study of the production of tubular components with branched channels using Water Assisted Injection Moulding Technique. International Conference on Polymers and Moulds Innovations (PMI2018), Sep 19-21, Guimarães, Portugal.(ISBN: 978-989-20-8809-9)
 23. Pereira, M.R., Morouço, P., Vasconcelos, I., Franco, M., Alves, N., Ginjeira, A. (2018). Computer fluid dynamics as a tool for analysis of endodontic irrigation. AIP Conference Proceedings, July, AIP Publishing LLC.
 24. Pereira, A.M., Silva, M.R., Reis, P.N.B., Ferreira, J.A.M. (2018). Adhesion on Hybrid Polymeric Materials Produced by DDM. 12th European Adhesion Conference and 4th Luso-Brazilian conference on Adhesion and Adhesives, Sep 5-7, Lisbon, Portugal.
 25. Pinheiro, J., Castro, A.P.G., Ruben, R.B., Guedes, J.M., Fernandes, P.R. (2018). Mechanical properties assessment for TPMS based scaffolds using homogenization methods. 6th European Conference on Computational Mechanics – ECCM2018, June 11-15, Glasgow, UK.
 26. Pinheiro, J., Ruben, R.B., Castro, A., Guedes, J.M., Fernandes, P.R. (2018). Numerical and experimental characterization of TPMS based scaffolds. 15th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering and 3rd Conference on Imaging and Visualization – CMBBE2018, Mar 26-29, Lisbon, Portugal. (ISBN: 978-989-99424-5-5)
 27. Reis N., Barreiros, F.M., Vasco, J.C (2018). Conformal cooling by SLM to improve injection moulding. International Conference on Polymers and Moulds Innovations (PMI2018), Sep 19-21, Guimarães, Portugal. (ISBN: 978-989-20-8809-9)
 28. Reis, D., Biscaia, S., Malça, C., Veloso, A., Morouço, P. (2018). Poly (glycerol sebacate)/Poly (ϵ -caprolactone) controlled architecture scaffolds for cartilage repair. Proceedings of the 14th World Congress of the International Cartilage Repair Society (ICRS2018), April 9-12, Macau, China.
 29. Reis, D., Branco, M., Biscaia, S., Morouço, P. (2018). Reinforcing the mechanical properties of 3D printed poly (ϵ -caprolactone) scaffolds through the addition of poly (glycerol sebacate). 8th World Congress of Biomechanics, July 8-12, Dublin, Ireland.
 30. Ruben, R.B., Vasco, J., Nascimento, E., Neves, T. (2018). Influence of fully automatic hexahedral runners mesh generation. International Conference on Polymers and Moulds Innovations (PMI2018), Sep 19-21, Guimarães, Portugal. (ISBN: 978-989-20-8809-9)
 31. Santo, P., Marques, A., Ferreira, V. (2018). Communication, Price and Website Personality as Loyalty Antecedents: The Mediator Role of Online. 47th

- European Marketing Academy Annual Conference, May 29 - June 1, Glasgow, UK.
32. Santos, T., Costa, V.A.F.L., Costa, C. (2018). Ovalization and other porcelain flaws when fired using microwave technology. 1st Iberic Conference on Theoretical and Experimental Mechanics and Materials/11th National Congress on Experimental Mechanics, Porto.
 33. Silva, R., Amado, S., João, F., Morouço, P., Pascoal-Faria, P., Alves, N., Veloso, A. (2018). Biomechanics modeling for functional analysis: sheep model. AIP Conference Proceedings, July, AIP Publishing LLC.
 34. Silva, M.R., Pereira, A.M., Sampaio, A.M., Pontes, A.J. (2018). 3D Printing commingled yarn thermoplastic composites - experimental characterization and model prediction comparison of mechanical properties. International Conference on Polymers and Moulds Innovations (PMI2018), Sep 19-21, Guimarães, Portugal. (ISBN: 978-989-20-8809-9)
 35. Skarmeas, D., Argouslidis, P., Kokkinaki, F., Mavrommatis, A., Lisboa, A. (2018). On Relationship Value in International Marketing Channels, Global Marketing Conference. Tokyo, Japan, American Marketing Association, European Marketing Academy.
 36. Sousa, D., Pinheiro, J., Kamma-Lorger, C.S., Ferreira, N., Viana, T., Abdulghani, S., Pascoal-Faria, P., Mateus, A., Mitchell, G. (2018). Manufacturing Polymer Based Objects with Functional Gradients through Morphology. International Conference on Polymers and Moulds Innovations (PMI2018) Sep 19-21, Guimarães, Portugal. (ISBN: 978-989-20-8809-9)
 37. Tomás, E., Moura, C., Morouço, P., Malça, C. (2018). Desenvolvimento de implantes temporários biodegradáveis para regeneração da cartilagem. Proceedings of Jornadas de Biomédica, May 2, Coimbra, Portugal.

2019

1. Almeida, S., Gaspar, F., Veludo, J. (2019). Safety Evaluation of the Wooden Roof Structures of the Buildings of the Historical Center of Leiria. 5th International Conference on Structural Health Assessment of Timber Structures (SHATIS19), Sep 25-27, Guimarães, Portugal.
2. Almeida, Z., Cruz, P., Aveelas, F., Ruben, R., Silva, S., Campos, M.J., Vaz, D.C. (2019). Spectroscopic characterization of chitosans of fungal origin: *Absidia* sp and *Cunninghamella* sp. 8º Congresso Nacional de Biomecânica, Feb 15-16, Unhais da Serra, Portugal. (ISBN: 978-972-789-586-1)
3. Alves, N., Gaspar, M.B., Pascoal-Faria, P. (2019). Computer-aided optimization in additive manufacturing: Processing parameters and 3D scaffold reconstruction. AIP Conference Proceedings, AIP Publishing LLC.
(<https://doi.org/10.1063/1.5114231>)
4. Alves, N., Pascoal-Faria, P., Amado, S. (2019). Preface of the "4th Symposium on Computational Tools for Direct Digital Manufacturing". AIP Conference Proceedings, AIP Publishing LLC.
(<https://doi.org/10.1063/1.5114227>)

5. Annappa, V., Gaspar, F., Mateus, A., Vitorino, J. (2019). 3D Printing for Construction Using Stone Sludge. Sustainability and Automation in Smart Constructions. Advances in Science, Technology & Innovation (IEREK Interdisciplinary Series for Sustainable Development), Springer.
(https://doi.org/10.1007/978-3-030-35533-3_16)
6. Apostolo, J., Couto, F., Dixe, M.A., Ribeiro, J., Marcelino, L., Malça, C., Santos-Rocha, R. (2019). A transdisciplinary strategy led by nurses to reduce frailty in elderly: The MIND&GAIT project. Proceedings of the Creating Healthy Work Environments 2019, New Orleans, Louisiana, USA.
7. Carvalho, T., Gaspar, F., Mateus, A., Monteiro, S., Campos, J. (2019). Evaluation of the gluing process of maritime pine wood veneers for application in overmolding. Sustainability and Automation in Smart Constructions. Advances in Science, Technology & Innovation (IEREK Interdisciplinary Series for Sustainable Development), Springer.
(https://doi.org/10.1007/978-3-030-35533-3_34)
8. Castro, A.P.G., Ruben, R.B., Guedes, J.M., Fernandes, P.R. (2019). Development of TPMS scaffolds for bone tissue engineering. 8º Congresso Nacional de Biomecânica, Feb 15-16, Unhais da Serra, Portugal. (ISBN: 978-972-789-586-1)
9. Cerejo, F.J., Silva, A., Vieira, M.T.F., Barreiros, F.M. (2019). Fused Deposition of WC+Co powder. Euro PM2019 – HM & AM Indirect Methods, Oct 13-16, Maastricht, Netherlands. (ISBN: 978-1-899072-51-4)
10. Cordeiro, R., Vallejo, M., Dias, P., Moura, C., Vicente, I., Galhano, C., Henriques, M., Veloso, A., Malça, C., Antunes, F., Morouço, P. (2019). Extraction and evaluation of industrial-waste derived cellulose for novel bioapplications. Proceedings of the 4th International Conference on Natural Fibers ICNF2019, Porto, Portugal.
11. Cruz, A., Lucia, M., Couto, F., Malça, C., Roseiro, L., Parreira, P., Apostolo, J. (2019). Comparison of the Physiological Cost Index between two types of walker in the walking of elderly people with mobility limitations. Proceedings of the International Congress of Health, Well-Being, Technology and Innovation (CISBETI 2019), Foz de Iguacu, Brazil.
12. Dias, J.R., Alves, A.F., Alves, N.M. (2019). Electrospun structures as a key tool to mimic the native skin ECM. EUPOC2019 - Electrospinning and related techniques: from design to production of advanced polymer materials and devices, May 12-16, Associazione Italiana di Scienza e Tecnologia delle Macromolecole, Como, Italy.
13. Francisco, C., Gaspar, F., Gonçalves, L., Rodrigues, H., Carracelas, M., Luna, I., Gonçalves, G., Providência, P. (2019). Data acquisition in Cultural Heritage buildings using non-destructive techniques, and its gathering with BIM – the case study of the gothic Monastery of Batalha in Portugal. Sustainability and Automation in Smart Constructions. Advances in Science, Technology & Innovation (IEREK Interdisciplinary Series for Sustainable Development), Springer.
(https://doi.org/10.1007/978-3-030-35533-3_9)

14. Freire, T., Brun, F., Mateus, A., Gaspar, F. (2019). 3D printing technology in the construction industry. Sustainability and Automation in Smart Constructions. Advances in Science, Technology & Innovation (IEREK Interdisciplinary Series for Sustainable Development), Springer.
(https://doi.org/10.1007/978-3-030-35533-3_19)
15. Espírito Santo, P.M., Ferreira, V.H.S., Marques, A.M.A. (2019). The impact of the employer's brand image on knowledge sharing. 20th European Conference on Knowledge Management, Sep 5-6, Lisbon, Portugal, ACPI.
(<https://doi.org/10.34190/km.19.142>)
16. Lisboa, A., Skarmeas, D. (2019). Export product development exploitation and exploration and performance: Linear, moderated, complementary and non-linear effects. AMA Global Marketing SIG Conference, May 20-23, Buenos Aires, Argentina.
17. Lopes, S., Cruz, A., Parreira, P., Apóstolo, J., Couto, F., Sousa, L., Bobrowicz-Campos, E., Santos, F., Roseiro, L., Malça, C. (2019). Andarilho instrumentado aplicado à prevenção do risco de queda de idosos. 8º Congresso Nacional de Biomecânica, Feb 15-16, Unhais da Serra, Portugal. (ISBN: 978-972-789-586-1)
18. Malça, C., Cunha, D., Costa, R., Pereira, C.D. (2019). Redes de investigação interinstitucionais e o processo ensino-aprendizagem: como avaliar e monitorizar - A realidade do Instituto Politécnico de Coimbra. XVI Foro Internacional Sobre Evaluación de La Calidad de La Investigación y de la Educación Superior (FECIES), Santiago de Compostela, Spain.
19. Miranda, G., Faria, S., Bartolomeu, F., Pinto, E., Alves, N., Silva, F. S. (2019). Predicting the influence of processing parameters on the thickness of Ti6Al4V thin-walled plates made by SLM. 8º Congresso Nacional de Biomecânica Feb 15-16, Unhais da Serra, Portugal. (ISBN: 978-972-789-586-1)
20. Morouço, P., Moura, C., Francisco, L., Ângelo, D., Alves, N. (2019). Biodegradable multi-material implants for temporomandibular joint disc repair. 8º Congresso Nacional de Biomecânica Feb 15-16, Unhais da Serra, Portugal. (ISBN: 978-972-789-586-1)
21. Morouço, P., Reis, D., Biscaia, S., Viana, T. (2019). Poly (glycerol sebacate) addition to 3D printed poly (εcaprolactone) based scaffolds for cartilage regeneration: morphological, thermal and mechanical properties. 8º Congresso Nacional de Biomecânica Feb 15-16, Unhais da Serra, Portugal. (ISBN: 978-972-789-586-1)
22. Pascoal-Faria, P., Alves, N., Kamma-Lorger, C.S., Marques, R., Gomes, M., Venkat, A., Silva, R. (2019). Multi-scale computer simulations of multi-tubular components manufactured by water-assisted injection moulding. AIP Conference Proceedings, AIP Publishing LLC.
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23. Pinheiro, J., Abdulghani, S., Pascoal-Faria, P., Sousa, D., Carreira, P., Viana, T., Kamma-Lorger, C.S., Mitchell, G.R. (2019). Tools to define and evaluate morphology mapping, a route to complex structures using direct digital manufacturing. AIP Conference Proceedings, AIP Publishing LLC.

(<https://doi.org/10.1063/1.5114229>)

24. Ruben, R.B., Feijó, S., Correia, M.S., Campos, C.A., Almeida, H. (2019). Análise do processo de fixação de implantes traqueobrônquicos. 8º Congresso Nacional de Biomecânica, Feb 15-16, Unhais da Serra, Portugal. (ISBN: 978-972-789-586-1)
25. Santos, T., Santos, N.F., Gomes, C.S.F., Henrietier, L., Costa, V.A.F., Costa, L.C. (2019). Features of utilitarian stoneware fired with microwave radiation. AMPERE 2019, 17th International Conference on Microwave and High Frequency Heating, Sep 9-12, Valencia, Spain.
(DOI: 10.4995/ampere2019.2019.9913)
26. Silva, R., Morouço, P., Veloso, A. (2019). Desenvolvimento de um sistema one-shot de baixo custo para aquisição de modelos 3D. 8º Congresso Nacional de Biomecânica, Feb 15-16, Unhais da Serra, Portugal. (ISBN: 978-972-789-586-1)
27. Thomas, C., Huang, Y., Faria, P.C., Datta, A. (2019). High-resolution head model of transcranial direct current stimulation: A labeling analysis. Annu Int Conf IEEE Eng Med Biol Soc. 2019, July 23-27, Berlin, Germany.
(DOI: 10.1109/EMBC.2019.8857181)
28. Tomás, E., Moura, C., Veloso, A., Malça, C., Morouço, P. (2019). Production of hybrid 3D scaffolds: reinforcing poly(ϵ -caprolactone)-graphene printed scaffolds with bacterial cellulose based hydrogel. Proceedings of the 6th International Conference on Multifunctional, Hybrid and Nanomaterials, Sitges, Spain.

2020

1. Antunes, R., Lisboa, A., Vitorino, L. (2020). Young consumers' intention to purchase products with ergonomic packages. Jornadas Luso-Espanholas de Gestão Científica: livro de resumos, Bragança, Portugal. (ISBN: 978-972-745-273-6)
2. Carvalho, T., Gaspar, F., Mateus, A. (2020). Formulating geopolymers: a review on the reintegration of inorganic waste streams. International Conference on Sustainable and Intelligent manufacturing (RESIM 2020), June 4-5.
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5.7 Patents

SUMMARY:

2018	2019	2020	2021	2022	2023	Total
-	-	2	9	7	1	19

2020

1. Método para o desenvolvimento de colofónias como potenciais espumas ecológicas a partir de derivados de resina de Pinheiro, Mohan S, Mateus A, Mitchell GR, Portuguese Patente nº 108652 awarded: 03/11/2020
2. Dispositivo de controlo de punho para treino e reabilitação funcional, Rosa M, Amado S, Pascoal-Faria P, Morouço P, Batista R, Silva D, Portuguese Patent nº 111118, awarded: 04/05/2020

2021

1. Material compósito de derivado de resina de pinheiro e de fibra vegetal e processo de fabrico, Artur Mateus, Vidhura Mahendra, Geoffrey Mitchell, Florindo Gaspar, João Horta, Portuguese Patent nº 110693, awarded: 02/08/2021
2. Dispositivo para elevação das pessoas, Fernando Francisco de Jesus Romeiro, Fernando da Conceição Batista, Portuguese Patent nº 110588, awarded: 28/12/2021
3. Sistema de fabrico aditivo para produção de componentes híbridos e respetivo método de fabric, Artur Mateus, Miguel Silva, Pedro Gago, Portuguese Patent, nº 109112, awarded: 03/02/2021
4. Embalagem, José Frade, Bruno Correia, Portuguese Patent nº 109702, awarded: 04/11/2021
5. Dispositivo multiválvulas para moldação de componentes com multicamadas de polímeros e secções ocas e processo de moldação, Cyril dos Santos, Artur Mateus, Rui da Silva, David Oliveira, João Vitorino, Nuno Roque, Portuguese Patent nº 116086, awarded: 22/10/2021
6. Dispositivo de deposição de pós ou grânulos Mateus, A., Silva, R., Gameiro, F., Póvoa, S., Marques, L., Santos., C., Portuguese Patent nº 117100, awarded: 09/05/2022
7. Intelligent Biomimetic Biodevice and Use Thereof Tatiana Patricio, Nuno Alves, Pedro Carreira, Fábio Gameiro, Artur Mateus, Portuguese Patent nº 117287, awarded: 14/12/2022
8. Integrated bioreactor system and process for control, learning and monitoring of cell culture using the same Pascoal-Faria, P., Nuno Alves, Carla Moura, João Meneses, Portuguese Patent nº 117309, awarded: 29/12/2022

9. Sistema e processo e manufatura aditiva para o fabrico de componentes cerâmicos acompanhados de suportes à base de carbonato de cálcio Artur Jorge dos Santos Mateus, Liliana Andreia de Jesus Gouveia, José Manuel Couceiro Barosa Correia Frase, Florindo José Mendes Gaspar, Portuguese Patent nº PT 117036, awarded: 29/07/2022

2022

1. Dispositivo para avaliação de compatibilidade transfusional e de reação antigénio-anticorpo, Carla Moura, Portuguese Patent nº 110532, awarded: 10/02/2022
2. Dispositivo Anelar De Mobilização Relativa E Imobilização Ativa Digital Da Mão, Pedro Carreira, Artur Mateus, Carlos Pina, Cyril Santos, Sara Biscaia, Portuguese Patent nº109642, awarded: 21/10/2022
3. Pavimento e revestimento cerâmico com cavidade no tardez para incorporação de fitas leds, José Frade, Liliana Gouveia, Portuguese Patent nº 110169, awarded: 29/07/2022
4. Biorreator de Perfusão de Câmara Dupla Moura, C., Trindade, D., Cordeiro, R., Alves, N., Pascoal-Faria, P., Meneses, J., Portuguese Patent nº 117857, awarded 10/05/2022
5. Dispositivo automático para fabrico aditivo sobre superfícies com composição discreta padronizada, continuamente adaptáveis e programáveis Mateus, A., Silva, R., Mitchell, G., Portuguese Patent nº 118201, awarded: 20/03/2024
6. Suporte multi-amostra para realizar multi-análises num só varrimento em micro-tomografia computadorizada Isabel Vasconcelos, Margarida Cabrita Franco, Nuno Alves, Mário Rito Pereira, Portuguese Patent nº115889, awarded: 28/02/2022
7. Sistema de deposição de pós configurado para o fabrico de objetos por fabricação aditiva e processo associado, Artur Mateus, Florindo Gaspar, Tomás de Carvalho, Portuguese Patent nº117286, awarded: 14/12/2022

2023

1. Sistema de controlo do motor de tração e do travão auxiliar de um veículo e processo associado, Tatiana Patrício, Nuno Alves, Pedro Carreira, Fábio Gameiro, Artur Mateus, Portuguese Patent nº117443, awarded: 05/07/2023

Submitted

1. Estrutura tridimensional biomimética inteligente e seu uso Tatiana Patrício, Artur Mateus, Hugo Marques, Nuno Alves, Portuguese Patent nº118343
2. Intelligent three-dimensional biomimetic structure and use thereof Tatiana Patrício, Artur Mateus, Hugo Marques, Nuno Alves, European Patent nº EP22211646.9
3. Sistema Integrado de Biofabricação para a Produção de Estruturas Tridimensionais, Nuno Alves, Paula Faria, Joana Valente, Juliana Dias, Tatiana Patrício, Sara Biscaia, Pedro Carreira, Portuguese Patent nº 118381, priority: 12/07/2022

4. Integrated biomanufacturing system for producing three-dimensional structures, Nuno Alves, Paula Faria, Joana Valente, Juliana Dias, Tatiana Patricio, Sara Biscaia, Pedro Carreira, European Patent n^oEP22212802.7, priority: 12/12/2022
5. Método e dispositivo de fabrico aditivo por extrusão para definição das propriedades dos materiais poliméricos utilizados Geoffrey R. Mitchell, Daniel P. da Silva, João Pinheiro, Artur Mateus, Paula Pascoal-Faria, Nuno Alves, Portuguese Patent n^o118151, priority: 08/09/2022
6. Geopolymer compositions comprising aluminum sludge and use thereof. Alana da Silva, Ana Peixinho, Florindo Gaspar, Tomás Archer de Carvalho, European Patent n^o EP 23182414.5, priority: 29/06/2023
7. Compositions and composite materials comprising geopolymer and agro-industrial waste and use thereof Alana da Silva, Ana Peixinho, Florindo Gaspar, Tomás Archer de Carvalho, European Patent n^o EP23178799.5, priority: 13/06/2023
8. Additive manufacturing process for manufacturing ceramic components accompanied by calcium carbonate based supports. Artur Jorge dos Santos Mateus, Liliana Andreia de Jesus Gouveia, José Manuel Couceiro Barosa Correia Frade, Luis Miguel Santana de Oliveira, Florindo José Mendes Gaspar European Patent n^o EP21179863.2, priority: 19/09/23
9. Método implementado por computador para o fabrico e otimização morfológica e estrutural de um objeto com propriedades variáveis espacialmente. Geoffrey R. Mitchell, Daniel P. da Silva, João Pinheiro, Artur Mateus, Paula Pascoal-Faria, Portuguese Patent n^o 118569
10. 3D Print head and printing system comprising it. Florindo Gaspar, Artur Mateus, Miguel Silva, Pedro Carreira, Marco Lagares (Pronum), European Patent n^o EP23182585.2

6 INVITED COMMUNICATIONS

SUMMARY:

2018	2019	2020	2021	2022	2023	Total
23	2	15	19	19	13	91

2018

1. Biscaia, Sara (2018). Projeto Insitu.Biomas. “Investigação no CHL – projetos em parceria com outras instituições”, 6ª conferência do Centro de Investigação, July 5, Centro Hospitalar de Leiria, Leiria, Portugal.
2. Lisboa, Ana (2018). Literatura Científica: Importância e aplicação – O caso do Marketing Internacional. Palestra na Escola Secundária Domingues Sequeira, Leiria, Portugal.
3. Lisboa, Ana (2018). International entrepreneurship and its performance outcomes. E21 1st International Symposium, INSEEC Business School, Paris, France.
4. Malça, Cândida (2018). Tree fault analysis on Fuzzy and Stochastic tools to optimize the fault prediction process to aid the new challenges of Industry 4.0. International Conference on Project MANAGEMENT (ProjMAN 2018), Nov 21–23, Lisbon, Portugal.
5. Mitchell, Geoffrey (2018). Challenges with Bipolymers and Bioplastics. 8th World Congress on Biopolymers and Bioplastics, June 28–30, Berlin, Germany.
6. Mitchell, Geoffrey (2018). Opportunities for Direct Digital Manufacturing in a new generation of energy storage devices. Al Maty Kazakshtan International Conference on Carbon and energetic materials, Sep, India.
7. Mitchell, Geoffrey (2018). Tools To Define and Evaluate Morphology Mapping, A Route To Complex Structures Using Direct Digital Manufacturing. Symposium on Computational Tools for Direct Digital Manufacturing (CT4DDM), held within the International Conference on Applied Mathematics ICNAAM 2018, Sep 13–18, Rhodes, Greece.
8. Mitchell, Geoffrey (2018). Manufacturing Polymer Based Objects with Functional Gradients through Morphology. International Conference on Polymer Moulds Innovation 2018, Sep 19–21, University of Minho, Portugal.
9. Mitchell, Geoffrey (2018). Multiscale Direct Digital Manufacturing. 3D Printing and Technology Expo, Mar 19–20, Park Inn by Radisson London Heathrow, London, UK.
10. Mitchell, Geoffrey (2018). Writing Complexity with Direct digital Manufacturing. Workshop on Complexity in Materials, University of Lisbon.
11. Mitchell, Geoffrey (2018). The material challenges of realistic tissue equivalent phantoms for medical imaging. Radiology 2018, London, UK.

12. Mitchell, Geoffrey (2018). Study of the production of tubular components with branched channels using Water Assisted Injection Moulding technique. International Conference on Polymer Moulds Innovation 2018, Sep 19-21, University of Minho, Portugal.
13. Mitchell, Geoffrey (2018). Templating the crystallisation of polyethylene using dibenzylidene sorbitol. International Conference on Polymer Moulds Innovation 2018, Sep 19-21, University of Minho, Portugal.
14. Mitchell, Geoffrey (2018). Engineered Healthy Food with Nutritional and Therapeutic Advantages. 4th IPLeiria's International Health Congress, May 11-12, IPLeiria, Leiria, Portugal.
15. Pereira, Ruben (2018). Molecularly designed hydrogels for 3D bioprinting: challenges and applications. Jornadas de Engenharia Biomédica 2018, Dec 17, ISEP – Instituto Superior de Engenharia do Porto, Porto, Portugal.
16. Pereira, Ruben (2018). Extrusion bioprinting of cell-instructive bioinks for skin tissue engineering. 3rd Annual 3D Printing & Bioprinting in Healthcare Conference, Oct 11-12, Brussels, Belgium.
17. Patrício, Tatiana (2018). Bio-inspired superparamagnetic hybrid microspheres for bone tissue engineering. Oct, Center for Neuroscience and cell biology, University of Coimbra, Portugal.
18. Pascoal-Faria, Paula (2018). Multi-scale Computer Simulations of Multi-tubular Components Manufactured by Water-assisted Injection Moulding. Computational Tools for Advanced Manufacturing (CT4AM), International Conference of Numerical Analysis and Applied Mathematics (ICNNAM 2018), Sep 13-18, Rhodes, Greece.
19. Pascoal-Faria, Paula (2018). Numerical Modeling of Transcranial Neuronal Stimulation using the Finite Element Method. Seminar at Warsaw University of Technology, Warsaw, Poland.
20. Pascoal-Faria, Paula (2018). Numerical simulation of tubular components with multi channels using water-assisted injection molding. 20th European Conference on Mathematics for Industry, Budapest, Hungary.
21. Pascoal-Faria, Paula (2018). Stimuli optimization for bioscaffolds placed at a bioreactor for in vitro tissue engineering applications. 5th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering and 3rd Conference on Imaging and Visualization, IST, Lisbon, Portugal.
22. Simões, Fábio (2018). Fabrico aditivo na indústria de moldes. Mould Matters, May 25, IEFP, Marinha Grande, Portugal.
23. Simões, Fábio (2018). Fabrico aditivo e indústria de moldes. IDI Meeting, June 16, Moldes RP, Marinha Grande, Portugal.

2019

1. Dias, Juliana (2019). Electrospun structures as a key tool to mimic the native skin ECM. EUPOC2019 - ELECTROSPINNING AND RELATED TECHNIQUES: FROM DESIGN TO PRODUCTION OF ADVANCED POLYMER MATERIALS AND

DEVICES, May 12-16, Associazione Italiana di Scienza e Tecnologia delle Macromolecole, Como, Italy.

2. Lisboa, Ana (2019). Estratégias de marketing internacional. Workshop Os desafios internacionais para a indústria dos plásticos, NERLEI, Leiria, Portugal.

2020

1. Fonseca, Ana Rita (2020). CircularSeas in Peniche: Turning ocean plastic waste into green products for maritime industries. Webinar Communication in the scope of the Interreg Atlantic Area project, July 8.
2. Lamolinara, Barbara (2020). Reaproveitamento de residuos agropecuários. "Engenharia de Biorecursos" Subject of the Engenharia Química e Biológica Master, Instituto Superior de Engenharia do Instituto Politécnico de Coimbra (ISEP/IPC), Dec 17, Portugal.
3. Lisboa, Ana (2020). Product innovativeness and market performance. E21 3rd International Symposium, Jan 23, University of Strathclyde, Glasgow, UK.
4. Massano, Anabela (2020). Sustainable Additive Manufacturing using tyre based composites. "Engenharia de Biorecursos" Subject of the Engenharia Química e Biológica Master, Instituto Superior de Engenharia do Instituto Politécnico de Coimbra (ISEP/IPC), Dec 17, Portugal.
5. Mitchell, Geoffrey (2020). Plenary Lecture on Manufacturing Novel Polymeric Material Without Synthetic Chemistry. International Conference on Polymer Science and Composite Materials, Feb 26-28, Lisbon, Portugal.
6. Mitchell, Geoffrey (2020). Creating polymeric materials at the point of fabrication of products. Vebleo International Conference on Materials science, Engineering and Technology, Oct 20.
7. Mitchell, Geoffrey (2020). Keynote lecture on Manufacturing plastic parts with digital definition of the properties at the point of manufacturing – the ultimate digital definition. 2nd edition of a major International Workshop on Materials and Design (MATDES2020), Mar 25-28, Madrid, Spain.
8. Mitchell, Geoffrey (2020). Keynote lecture on Organising Humans and Machines - direct digital manufacturing factories of the future. International Conference on Advanced Research on Sustainable and Intelligent Manufacturing (RESIM2020), June 4-5.
9. Mitchell, Geoffrey (2020). Keynote lecture on Designing new polymeric materials using direct Digital Manufacturing. Second International Conference on Advanced Materials and Technology (ICMAT-2019), Jan 16-18, JSS Science and Technology University Mysore, India.
10. Mitchell, Geoffrey (2020). Safety and Quality Control in the Polymer Industry. Second International Conference on Advanced Materials and Technology (ICMAT-2019), Jan 16-18, JSS Science and Technology University Mysore, India.
11. Mitchell, Geoffrey (2020). Keynote lecture on Direct Digital Manufacturing 'The revolution. Second International Conference on Advanced Materials and Technology (ICMAT-2019), Jan 16-18, JSS Science and Technology University Mysore, India.

12. Mitchell, Geoffrey (2020). Design new smart materials through direct Digital Manufacturing. International Conference and Global Virtual Summit on Materials Science and Engineering, Aug 28-30.
13. Mitchell, Geoffrey (2020). Keynote lecture on Future challenges for Mechanical Engineering. International Conference on “Advanced in Mechanical Engineering I’NAME 2K29, Nov 6-7, New Delhi, India.
14. Ramani, Melinda (2020). (Re)aproveitamento de matéria orgânica para pigmentação. "Engenharia de Biorecursos" Subject of the Engenharia Química e Biológica Master, Instituto Superior de Engenharia do Instituto Politécnico de Coimbra (ISEP/IPC), Dec 17.
15. Trindade, Daniela (2020). Implantes para a Regeneração/Substituição do disco da articulação temporomandibular. Unidade Curricular de Estudo do Movimento Humano de Fisioterapia, Escola Superior de Saúde do Politécnico de Leiria (ESSLei), Fev 28, Leiria, Portugal.

2021

1. Barreiros, F. (2021). A tecnologia de (micro) injeção de pós metálicos/cerâmicos. Unidade Curricular Tecnologias Avançadas do Mestrado Integrado em Engenharia Mecânica da Universidade de Coimbra, Oct 1, Virtual.
2. Ferreira, Carolina (2021). A Biorefinery Approach to the Biomass of the Seaweed *Undaria pinnatifida* (Harvey Suringar, 1873): Obtaining Phlorotannins-Enriched Extracts for Wound Healing. European Biomass Association (EABA) Technical Webinar - Biorefineries for algae biomass, Oct 23, Virtual.
3. Gaspar, F. (2021). Durabilidade das estruturas de madeira – aspetos construtivos. MASS TIMBER SEMINAR'21, Figueira da Foz, Portugal.
4. Lisboa, Ana (2021). Product development in international markets. International Manufacturing Forum Series chair of Innovation and Industry 4.0, Nov 4, CDRSP/virtual.
5. Margarida Franco (2021). Micro computed tomography as a preclinical imaging tool to assess brain microvasculature. International Course “Models of the Blood-Brain Barrier: Scientific Tools to Target the Brain”, Organization - Faculty of Pharmacy, University of Lisbon, March 18-20, online International Course.
6. Mitchell, Geoffrey (2021). 3D Printing – A Novel Route to Fabricating New Polymeric Materials with Tailored properties. International Conference POLYCON 2021 Advanced Polymeric Materials and Applications Plenary Lecture, April 23-24, JSS Mahavidyapeetha, Mysore, India.
7. Mitchell, Geoffrey (2021). Polymer Blends, Mixtures and Composites for Increased Circularity and Enhanced Performance. International Conference PolymerConnect 2021 Plenary Lecture, July 05-07, Virtual.
8. Mitchell, Geoffrey (2021). How to improve your soft skills in Academe. International Manufacturing Forum Series 2021, Dec 03, CDRSP – VIRTUAL.

9. Mitchell, Geoffrey (2021). A System for Printing Properties. MATDES 2021 Internataional Conference on Materials and Design Online and Moscow Russia, February 20, Virtual and Moscow, Russia.
10. Mitchell, Geoffrey (2021). The Dilemma of Nanoparticles in Polymers. International Conference on Chemistry and Nanoscience Plenary Lecture, January 25-26, Virtual.
11. Mitchell, Geoffrey (2021). Towards Zero Waste – Increasing Circularity to 100%, the Plastics Challenge of the Century. 11th International Beremzhanov Congress on Chemistry and Chemical Technology Keynote Lecture, Almaty, Kazakhstan.
12. Pascoal-Faria, Paula (2021). Digital Twin: A new tool for tissue engineering. International Conference on Polymer Science and Composite Materials - Polymer Connect.
13. Ruben, Rui B. (2021). Characterization of composite materials through the homogenization method. Composites and Digitalization... Potential benefits to the industry, Nov 19, PIEP, Guimarães, Portugal.
14. Silva, António (2021). Tecnologias de manufatura aditiva de metais. Estratégias e Desafios para a MA 3D - DEMGI - ESTGV (2021), Nov 19, Virtual/Viseu, Portugal.
15. Silva, António (2021). Debate e moderação: fabrico aditivo metalico na indústria. Webinar: Fabrico de componentes metálicos industriais através de tecnologias aditivas, Jan 25, Virtual, Portugal.
16. Silva, Daniel (2021). Debate: Como acelerar a transição digital das empresas dos setores dos Moldes e Plásticos? Webinar Shift2Future – Moldes e Plásticos: Como acelerar a transição digital nas PME? June 23, Universidade do Minho, Portugal.
17. Silva, Rui (2021). Biomecânica do Movimento Humano. Unidade Curricular de Biomecânica da Licenciatura em Ortoprotesia, June, Instituto Politécnico de Lisboa.
18. Santos, T., Pascoal-Faria, P. (2021). SoftAware Soft Skills Toolkit. IMFS - International Manufacturing Forum Series 2021/Creating Talents in Software Engineering: software-project.eu, Dec 09, CDRSP, Portugal.
19. Vago, L., Gaspar F., Mateus, A. (2021). 3D Printing on a Large Scale for Construction. International Manufacturing Forum Series, 10/2021, Virtual.

2022

1. Biscaia, Sara (2022). 3D Printed NanoComposites for Bone Regeneration. International Conference on Polymer Science and Composite Materials, April 4, Webinar Pages Conferences.
2. Encarnação, Telma (2022). Microalgae for Industrial Wastewater treatment. CHEMEET.
3. Encarnação, Telma (2022). Microalgae Biorefinery: high-value products from bioremediation processes. RESIM, CDRSP.
4. Lamolinara, Barbara (2022). The circular business models as strategic tools for a sustainable development. Workshop Greenovet- Business Circular Models &

- Green Innovation and Bridging, Dec 13, Instituto Politécnico de Lisboa, Portugal.
5. Lisboa, Ana (2022). Digitalization of business: Paths and examples. Seminar to Strategy and Management of Digital Business course, Nov 7, Mälardalen University, Sweden.
 6. Lisboa, Ana (2022). Innovation in digital business models. Seminar to Re-framing Digitalization PhD, March 10, Mälardalen University, Sweden.
 7. Mitchell, Geoffrey (2022). Morphology Mapping – A New Approach to 3-D Printing with Polymers. 3DPAM 3D and Additive Manufacturing 2022 Keynote Lecture, Nov 10-11, Valencia Spain.
 8. Mitchell, Geoffrey (2022). Changing the Paradigm – 3d printing is more than shape. 3rd Global Webinar on 3D printing and additive Manufacturing, Dec 8-9, Virtual.
 9. Mitchell, Geoffrey (2022). Bringing Injection Moulding of Plastics to the SAXS Beamline at ALBA. The 10th AUSE Conference and 5th ALBA User’s Meeting, Sep 5-8, Barcelona, Spain.
 10. Mitchell, Geoffrey (2022). 3-d printing a novel route to fabricating new polymeric materials with tailored properties. 13th International Conference Advancements in Polymeric Materials APM 2022, March 3-8, Chennai, India and online.
 11. Mitchell, Geoffrey (2022). Photoactive Polymers. International Conference on Chemistry Chemeet 2022, June 27-29, Virtual.
 12. Mitchell, Geoffrey (2022). Changing the Paradigm in Design for 3D printing – Morphology Mapping. International Conference - Design for 3D printing, Sep 22-23, Singapore and online.
 13. Mitchell, Geoffrey (2022). CircularSeas in Peniche: Turning ocean plastic waste into green products for maritime industries. International Conference on Ecodesign, science, art, textiles and architecture, Dec 7, Porto, Portugal.
 14. Mitchell, Geoffrey (2022). 3-d Printing Patterns of Properties.
 15. Moura, Carla (2022). Additive Manufacturing for Temporomandibular Joint Tissue Engineering. Stem Cell Bioengineering Research Group, March 25 (online).
 16. Pascoal-Faria, Paula (2022). Numerical Modelling Impact in the Design and Development of Tissue Engineering Systems. International Conference on Advanced Research on Sustainable Intelligent Manufacturing (RESIM 2022).
 17. Pascoal-Faria, Paula (2022). Numerical Modelling Approaches for Bone Tissue Engineering. Materials.
 18. Ruben, Rui B. (2022). Implantes ortopédicos – da imagem médica à análise de desempenho. Seminário Técnico, Abril 13, ISEL, Lisbon, Portugal.
 19. Ruben, Rui B. (2022). O ensino da Biomecânica em Portugal e na Europa. II Simpósio da Sociedade Portuguesa de Biomecânica “Biomecânica: contributos para os objetivos de Desenvolvimento Sustentável preconizados na Agenda 2030 das Nações Unidas”, July 15, Crato, Portugal.

2023

1. Dias, Juliana R. (2023). Electrospun-based biostructures as a key tool to promote tissue regeneration. Joint Research Symposium: PRISM Technological University of the Shannon: Midlands and CDRSP Polytechnic of Leiria, July 19, online.
2. Dias, Juliana R. (2023). Electrospun-based biostructures as a key tool to promote tissue regeneration. class seminar to students of 2year of Physiotherapy degree, Nov 9, ESSLEI/ Polytechnic of Leiria, Portugal.
3. Dias, Juliana R. (2023). Electrospun-based biostructures as a key tool to promote tissue regeneration. 15th WBME Conference Day, Oct 7, Faculty of Sciences of the University of Lisbon (FCUL), Portugal.
4. Dias, Juliana R. (2023). De estudante a docente de Biomecânica. O percurso., 5^a feira de estágios & orientação vocacional, ESTG/ Polytechnic of Leiria, March 8, ESTG/ Polytechnic of Leiria, Portugal.
5. Ferreira, Carolina (2023). A pele tem um super poder incrível: A regeneração! Mas e quando este falha? Pint of Science Portugal, May 22-24, Leiria, Portugal.
6. Gouveia, Olivier (2023). O papel do fabrico aditivo e da simulação computacional na produção de componentes metálicos de elevada performance. Seminário Técnico, Dec 13, ISEC, Coimbra, Portugal.
7. Mitchell, Geoffrey (2023). Electrospinning and Small-Angle Neutron Scattering. NEMPO (Neutron and Muons User Group in Portugal), Jan 21, Virtual.
8. Moura, Carla (2023). Biomanufacturing strategies towards bone and cartilage tissue regeneration. Keynote lecture of the International Conference on Mechanical Technologies and Structural Materials, Sep 21-22, Split, Croatia.
9. Novo, Paulo (2023). Additive Manufacturing for Industry 4.0. Projeto HEIn4 (BOOSTING THE ROLE OF HEIs IN THE INDUSTRIAL TRANSFORMATION TOWARDS THE INDUSTRY 4.0 PARADIGM IN GEORGIA AND UKRAINE), Nov 8, ISEP-IPP, Porto, Portugal.
10. Pascoal-Faria, Paula (2023). Development of Mathematical and Computational. AL4AnimalS, Oct 20-21, ICBAS, Porto, Portugal.
11. Pascoal-Faria, Paula (2023). Oportunidades tecnológicas aplicadas en salud: la respuesta de los modelos matemáticos y computacionales a los desafíos de la regeneración de tejidos. III encuentro makers por la discapacidad física y orgánica, Oct 27, Burgos, Spain.
12. Ruben, Rui B. (2023). Engineering Tools for Personalized Medicine. Seminário Técnico, Nov 24, Universidade de Coimbra, Coimbra, Portugal.
13. Simões, F.J.P. (2023). Mam technologies in the tooling sector: additool pilots - ipleiria. ADDITOOOL Metal Additive Manufacturing Conference 2023, Fev 9, San Sebastian, Spain.

7 TRAINING

SUMMARY:

	TOTAL
Post-Doc	8
PhD	24
MSc	121
Others	114

7.1 Post-Doctor Supervision

1. Dr. Dora Sousa, Postdoctoral fellow 2017-2018 in Polymer physics. Advisor: Geoffrey Mitchell
2. Dr. Vidhura Mahendra, Postdoctoral fellow 2016-2018 in Organic chemistry. Advisor: Geoffrey Mitchell
3. Dr. Carla Moura, Postdoctoral fellow 2018-2021 in Bioengineering. Advisor: Nuno Alves
4. Dr. Maryam Ghalati, Postdoctoral fellow 2020-2021 in Mathematical Modelling. Advisor: Nuno Alves
5. Dr. Tiago André César dos Santos, Postdoctoral fellow 2021 in Mathematical Modelling. Advisor: Paula Pascoal-Faria
6. Dr. Juliana Dias, Postdoctoral fellow 2018-2022 in Biomedical Sciences. Advisor: Nuno Alves
7. Dr. Tatiana Patrício, Postdoctoral fellow 2019-2022 in Biomedical engineering. Advisor: Nuno Alves
8. Dr. Joana Valente, Postdoctoral fellow 2019-2022 in Biotechnology. Advisor: Nuno Alves

7.2 PhD thesis

1. "Engenharia de tecidos - desenvolvimento de biomateriais e terapias celulares na prática clínica", Student: Fernando Guedes Rodrigues, Porto University, Advisor: Nuno Alves, Ana Collete

2. "Numerical modelling of mechanical and electromagnetic stimulation in bone regeneration", Student: João Meneses, Universidade de Lisboa, Portugal, Advisor: Paula Pacoal-Faria, Pedro Miranda, Nuno Alves
3. "Computational fluid dynamics study on mesial roots of mandibular molars", Student: Mário Jorge Rito Dias Pereira, Universidade de Lisboa, Portugal, Advisor: Paula Pascoal-Faria
4. "Análise numérica e otimização de implantes traqueobrônquicos" Student: Jairson Dinis, PhD in Engenharia Mecânica, Universidade Nova de Lisboa, Advisor: Rui Ruben, Marta Carvalho
5. "Implantable electrospun nanofibers containing gold nanoparticles for radiotherapy in gastric tumors", Student: Sara Guerreiro, PhD in Biomedical Engineering Universidade do Porto, Portugal, Advisor: Juliana Dias
6. "miniGEN4kill - Biotechnological platform based on gene therapy with minicircle DNA and antiviral nanoparticles to treat and fight cervical cancer" Student: Diana Pereira, Universidade da Beira Interior, Portugal, Advisor: Ângela Sousa, Joana Valente, Nuno Alves
7. "Numerical Modelling of Mechanical and Electromagnetic Stimulation in Bioreactors and Scaffolds for Tissue Engineering", Student: João Pedro Almeida Meneses, Universidade de Lisboa, Portugal, Advisor: Paula Pascoal-Faria
8. "Association of 3D printing and cellular therapies for regenerative medicine", Student: Ana Catarina Sousa, Porto University, Advisor: Ana Colette, Nuno Alves
9. "3D-printed medical devices based on antimicrobial polymeric composites to prevent hospital-acquired infections", Student: Tatiana Padrão, PhD in Bioengineering, Universidade do Porto, Portugal, Advisor: Juliana Dias
10. "In situ Injectable Decellularized-based Hydrogel for Temporomandibular Disc Repair", Student: Daniela Trindade, PhD in Biomedical Science, Universidade do Porto, Portugal, Advisor: Carla Moura, Nuno Alves; Ana Colette
11. "Phased co-culture on hybrid scaffolds for articular cartilage repair PhD in Biomedical Science", Student: Rachel Cordeiro, Universidade do Porto, Portugal, Advisor: Carla Moura, Nuno Alves, Ana Colette
12. "Engineering self-regulating construct-bioreactor to model the dynamic microenvironments of realistic tumors", Student: João Gil, PhD in Nanociências e Nanotecnologia, Universidade do Aveiro, Portugal, Advisor: Gil Gonçalves, Vânia Silverio, Carla Moura
13. "Development of multicomponent scaffolds for long bone defects' regeneration, PhD in Biomedical Science", Student: Sara Biscaia, Universidade do Porto, Portugal, Advisor: Nuno Alves, Ana Collette, Carla Moura
14. "Enhanced geopolymer cement formulations for extrusion-based 3D printing in construction, PhD in Engenharia de Materiais", Student: Tomás Maria Siqueira de Almeida Archer de Carvalho, Universidade de Aveiro, Portugal, Advisor: Florindo Gaspar, Ana Marques, Artur Mateus

15. "3D printed materials as energetic materials, Al-Farabi Kazakh National University", Student: AB Turganbay, Advisor: Geoffrey Mitchell, M. Nazhipkyzy
16. "Hydrophobic nanoparticles based on silicon waste", Student: Gulmira Naurzbayeva, Al-Farabi Kazakh National University, Advisor: Geoffrey Mitchell, M. Nazhipkyzy
17. "Smart circular business models in Portuguese agribusiness value chains", Student: Barbara Lamolinara, Universidade de Trás-os-Montes e Alto Douro, Advisor: Mário Teixeira, Vitor Ferreira, Cristina Marreiros
18. "Machine Learning enhanced Finite Element Method (ML-enFEM) for contact/impact simulations", Student: Olivier Gouveia, PhD in Computational Engineering, IST, University of Lisbon, Advisor: Rui Ruben, José Miranda Guedes
19. "Green recyclable printed circuit Boards", Student: João Carlos Velosa Pereira, Universidade da Beira Interior, Portugal, Advisor: Geoffrey Mitchell, Joana Curto (UBI)
20. "Multi-oriented electrospun structures for wound healing", Student: Carolina Alexandra Marzia Ferreira, PhD in Ciências Biomédicas, Instituto de Ciências biomédicas Abel Salazar (ICBAS) da Universidade do Porto, Advisors: Ana Colette, Juliana Dias, Marco Lemos
21. "Development of metamaterials for additive manufacturing", Student: Miguel José dos Reis Silva, PhD Polymer Engineering, Department of Mechanical Engineering, Minho University, Advisor (co): António Mário Pereira
22. "TRiNa4CC - Transition metal nanoparticles and Gene therapy: Combined approach for cervical cancer", Student: Renato Nunes, Universidade da Beira Interior, Portugal, Advisor Ângela Sousa, Joana Valente, Tatiana Patricio
23. "Gradient conductive scaffolds combined with multi-stimuli bioreactor devices for osteochondral tissue engineering: an in silico and in vitro approach", Student: Pedro Miguel Alves Marcelino, Universidade de Lisboa, Portugal, Advisor: Paula Pascoal-Faria
24. "Designing and mapping recycled semi-crystalline thermoplastics properties during the manufacture of technical mono-material parts", Student: Anabela P Massano, Universitat Autònoma de Barcelona, Advisor: Geoffrey Mitchell, Marc Malfois

7.3 MSc thesis

1. Aplicación de los principios LEAN en la producción de los asientos para autobuses, Student: Juan Carlos Barrera León, MSc in Mechanical Engineering, Department of Mechanical Engineering of ESTG/Polytechnic Institute of Leiria. Advisor: António Mário Pereira
2. Desenvolvimento de um Sistema de Coextrusão de Precisão. Student: Filipe André dos Santos, MSc. In Mechanical Engineering, ISEC. Advisor: Cândida Malça

3. Estratégias de um procedimento híbrido de manutenção aplicada a uma indústria de trefilaria. Fapricela, SA, Student: Paulo Jorge Pereira Ferreira, MSc in Mechanical Engineering, ISEC. Advisor: Cândida Malça
4. Incorporation of industrial waste in the production of clay bricks, Student: Siranjeevi Vivekananthan, MSc in Civil Engineering - Building Construction, Polytechnic of Leiria, Advisor: Florindo Gaspar
5. Avaliação da segurança estrutural das coberturas de madeira dos edifícios do centro histórico de Leiria, Student: Sandra Cristina Alves Almeida, MSc in Civil Engineering - Building Construction, Polytechnic of Leiria, Advisor: Florindo Gaspar, João Veludo
6. Design of wood connections with dowel type fasteners, Student: Luis Enrique Chávez Rubio, MSc in Civil Engineering - Building Construction, Polytechnic of Leiria, Advisor: Florindo Gaspar, Wilson Santiago Medina Robalino (Universidad Técnica de Ambato)
7. Heat transfer in heterogeneous lightweight wall systems with cement panel, Student: Yurii Skubko, MSc in Civil Engineering - Building Construction, Polytechnic of Leiria, Advisor: Florindo Gaspar, Nikolay Sytnichenko (Donbas National Academy of Civil Engineering and Architecture)
8. Green cement-based material optimization for additive manufacturing in construction, Student: Vani Basvagatha Annappa, MSc in Civil Engineering - Building Construction, Polytechnic of Leiria, Advisor: Florindo Gaspar, Artur Mateus
9. Development of an Industrial Robot Work Cell, Student: Manokaran Pandiyan, MSc in Product Design Engineering, Polytechnic of Leiria, Advisor: Fábio Simões
10. Desenvolvimento de um Sistema de Coextrusão de Precisão, Student: Filipe André dos Santos, MSc in Mechanical Engineering, ISEC, Coimbra, Advisor: Cândida Malça
11. Estratégias de um procedimento híbrido de manutenção aplicada a uma indústria de trefilaria, Student: Paulo Jorge Pereira Ferreira, MSc in Mechanical Engineering, Fapricela, SA. & ISEC, Coimbra, Advisor: Cândida Malça
12. Melhoria da produtividade de uma linha de equipamentos para o fabrico de artefactos de cimento com base no DMAIC, Student: Ricardo Jorge de Oliveira, MSc in Engenharia Mecânica - Produção Industrial, Polytechnic of Leiria, Advisor: Irene Ferreira, Fátima Barreiros
13. Otimização Simultânea de Forma e Topologia de Estruturas Casca, Student: Rafael Sanches, Polytechnic of Leiria, Advisor: Rui Ruben, João Matias
14. Multi-Branched Tubular Components Using Water-Assisted Injection Moulding, Student: Sachin Nanjunda, MSc in Product Development and Engineering, Polytechnic of Leiria, Advisor: João Matias, Rui Ruben
15. Marketing Compliance, Protection and Management of Personal Data Implementation of the General Regulation of Data Protection, Student: Daniela Brito, MSc in Relational Marketing, Polytechnic of Leiria, Advisor: Vitor Ferreira

16. The Strategic Management Tools and the impact of its application on the Performance of Portuguese SMEs, Student: Liliana Oliveira, MSc in Management, Polytechnic of Leiria, Advisor: Vitor Ferreira
17. The EFQM Excellence Model operates Total Quality Management and has a positive influence on Organizational Performance? Student: Joana Oliveira, MSc in Management, Polytechnic of Leiria, Advisor: Vitor Ferreira
18. Budget Control and Product Management at the D. Dinis Business School, Student: Jorge Rego, MSc in Management, Polytechnic of Leiria, Advisor: Vitor Ferreira
19. Manufacturing Technologies in Mold Industry and Future Challenges, Student: Hemeswar Narayanaswamy, MSc in Product Development and Engineering, Polytechnic of Leiria, Advisor: Fábio Simões
20. Quality control and design in metallic construction, Student: Dhilipkumar Ganapathi, MSc in Product Development and Engineering, Polytechnic of Leiria, Advisor: João Matias
21. Desenvolvimento e aplicação de compósitos de fibras naturais e bio polímeros no design de aparelhos tecnológicos, Student: Gleiciane dos Santos Silva, MSc in Product Development and Engineering, Polytechnic of Leiria, Advisor: Carlos Capela, Marcelo Calvete Gaspar
22. Aplicación de los principios LEAN en la producción de los asientos para autobuses, Student: Juan Carlos Barrera León, MSc in Mechanical Engineering-Industrial Production, Polytechnic of Leiria, Advisor: Maria Leolpodina Alves, António Mário Pereira
23. Multi-Branched Tubular Components Using Water-Assisted Injection Moulding, Student: Sachin Nanjunda, Polytechnic of Leiria, Advisor: Rui Ruben, João Matias
24. Previsão de vida à fadiga dos aços AISI 1024 e AISI 304 para aplicação em componentes na indústria de tratamento de resíduos orgânicos, Student: Pedro Miguel Igreja Amaral, MSc in Mechanical Engineering, Departamento de Engenharia Mecânica, FCT-UNLisboa, Advisor: António Mário Pereira
25. Big Printer 3D Delta. Student: Daniel Ervedeira Rodrigues, MSc in Mechanical Engineering, ISEC. Advisor: Cândida Malça
26. Desenvolvimento e implementação de um modelo de transferência de calor para aplicar no projeto de moldes de elevado desempenho", Student: Paulo Roque Gomes de Freitas, MSc in Automotive Engineering, Polytechnic of Leiria, Advisor: Artur Mateus, Helder Santos
27. A influência do digital storytelling no comportamento do consumidor, Student: Catarina Matos Sousa, MSc in Comunicação e Média, Polytechnic of Leiria, Advisor: Ana Lisboa
28. Plano de comunicação da Cadfow para as instituições de ensino superior, Student: Inês Isabel Pereira Margarido, MSc in Comunicação e Média, Polytechnic of Leiria, Advisor: Ana Lisboa
29. Scaffolds and bioreactor characterization towards bone regeneration: proposal of a computer-aided design model, Student: Cristiana Fernandes, MSc in

Gestão de Sistemas de Informação Médica, Polytechnic of Leiria, Advisor: Paula Faria, Rita Ascenso, Carla Moura

30. Processing, Characterization and Simulation of Extrusion Process, Student: Romeo Sebastián Rivadeneira Quelal, MSc in Product Development and Engineering, Polytechnic of Leiria, Advisor: Carlos Capela, Rui Ruben
31. Estudo e comparação das propriedades do produto do processo de fabrico aditivo com o material convencional, Student: Ivan Moroz, MSc in Engenharia Mecânica - Produção Industrial, Polytechnic of Leiria, Advisor: Joel Vasco, Rui Ruben
32. Otimização de suportes na produção de componentes metálicos por processos aditivos, Student: Ricardo da Silva Simões Lopes, MSc in Engenharia Mecânica - Produção Industrial, Polytechnic of Leiria, Advisor: Joel Vasco, Rui Ruben
33. Industrialização de peça plástica segundo requisitos do setor automóvel, Student: Bruno Miguel Sousa Henriques, MSc in Engenharia Mecânica - Produção Industrial, Polytechnic of Leiria, Advisor: Irene Ferreira, Fátima Barreiros
34. Study on Gun Drilling Technology in CNC Machining, Student: Dhanush Kathiresan, MSc in Product Development and Engineering, Polytechnic of Leiria, Advisor: João Matias
35. Parametrização do Fabrico Aditivo em Grande Escala por FDM, Student: Eduardo José Custódio Branquinho Crespo, MSc in Product Development and Engineering, Polytechnic of Leiria, Advisor: Fábio Simões
36. Value Engineering, Student: Eduardo Carlos Antonio Cerda Tolentino, MSc in Product Development and Engineering, Polytechnic of Leiria, Advisor: Fábio Simões
37. Performance of cutting tools in milling, Student: Vijay Wilson, MSc in Product Development and Engineering, Polytechnic of Leiria, Advisor: Fábio Simões
38. Additive manufacturing of technical ceramics, Student: António Miguel Rocha Raimundo Silva, MSc in Product Development and Engineering, Polytechnic of Leiria, Advisor: Fátima Barreiros, Maria Teresa Vieira
39. Processing, Characterization and Simulation of Extrusion Process, Student: Romeo Quelal, Polytechnic of Leiria, Advisor: Rui Ruben, Joel Vasco
40. Comparative Study of Mechanical Properties of Materials Manufactured with Conventional and Additive Manufacturing, Student: Ivan Moroz, Polytechnic of Leiria, Advisor: Rui Ruben, Joel Vasco
41. Optimization of metallic supports in additive manufacturing, Student: Ricardo da Silva Lopes, Polytechnic of Leiria, Advisor: Rui Ruben, Carlos Capela
42. Biopolímeros para otimização de scaffolds em aplicações biomédicas: extração e caracterização, Student: Rachel Cordeiro, University of Coimbra, Advisor: Filipe, Marta Henriques, Carla Moura
43. Estudo de componentes óticos para a indústria automóvel, MSc in Engenharia Automóvel, Student: Artur José Cavalcanti Potêncio, Polytechnic of Leiria, Advisor: Pedro Martinho, Irene Ferreira
44. The design and evaluation of a digital multi-modal phantom of a life-sized mouse using computational simulation, Student: Vitor Manuel de Costa

- Amorim, University of Coimbra, Advisor: Nuno Ferreira, Francisco Caramelo, Geoffrey Mitchell, Paula Pascoal-Faria
45. The design and evaluation of a digital multi-modal phantom of a life-sized mouse using direct digital manufacturing, Student: João Gabriel de Jesus Pereira Saraiva, University of Coimbra, Advisor: Geoffrey Mitchell, Paula Pascoal-Faria
 46. Desenvolvimento de um Andarilho Instrumentado para apoio a Pacientes com Mobilidade Reduzida. Student: Stephane Pereira Lopes, MSc in Mechanical Engineering, ISEC. Advisor: Cândida Malça
 47. The design and manufacture of an anthropomorphic head phantom using direct digital manufacturing techniques, Student: Silvestre Alberto Piedade, MSc in Engenharia Biomédica e Biofísica (Engenharia Clínica e Instrumentação Médica), Faculdade de Ciências, Universidade de Lisboa, Advisor: Nuno Lobo e Matela, Geoffrey Mitchell, Paula Pascoal-Faria
 48. Estudo de Materiais de Matriz Polimérica Reforçados Com Cargas Recicláveis, Student: Flávio Alexandre Mendes Carvalho, MSc in Engenharia Mecânica - Produção Industrial, Polytechnic of Leiria, Advisor: Maria Leopoldina Alves, Pedro Martinho
 49. Incorporating seaweed bioactive extracts in electrospun wound dressings, Student: Carolina Alexandra Marzia Ferreira, MSc in Biotechnology of Marine Resources, Polytechnic of Leiria, Advisor: Marco Lemos, Juliana Dias
 50. Industrial Project on Hot Runner Systems, Student: Chethan Srinivasappa, MSc in Product Development and Engineering, Polytechnic of Leiria, Advisor: João Matias
 51. Optimisation of process and material for cork 3D printing, Student: Gowtham Ram Vasu, MSc in Product Development and Engineering, Polytechnic of Leiria, Advisor: João Matias
 52. Automatic volume inspection for glass blow moulds, Student: Tiago André Roriz Ferreira, MSc in Product Development and Engineering, Polytechnic of Leiria, Advisor: Carlos Neves, Fábio Simões
 53. Determination of properties of composite materials through the homogenization method, Student: Ricardo Narciso Lopes, Polytechnic of Leiria, Advisor: Rui Ruben, Joel Vasco
 54. Determination of properties of non-homogeneous materials using the homogenization method, Student: João Rodrigues, Polytechnic of Leiria, Advisor: Rui Ruben, Carlos Capela
 55. Development of tissue-engineered temporomandibular discs based on xenogeneic extracellular matrices, Student: Daniela Alexandra Pinheiro Trindade MSc in Engenharia Biomédica, Instituto Superior de Engenharia de Lisboa, Advisor: Carla Moura, Cecília Calado (co-advisor)
 56. Estudo preliminar da evolução cinemática da marcha no pós-traumatismo cranioencefálico, Student: Sandra Marlene Correia Garcez, MSc in Medicina Veterinária, Instituto de Ciências Biomédicas Abel Salazar, Advisor: Ana Colette Maurício, Nuno Alves (co-advisor), Ângela Martins (co-advisor)

57. Expanding the limits of Design by Powder Bed Additive manufacturing based on Digital Selective Powder Deposition, Student: Rafael Melo Tavares, MSc in Product Development and Engineering, Polytechnic of Leiria, Advisor: Artur Mateus
58. Large scale Binder jet printing using waste materials, Student: João Afonso Lupi de Ordaz Caldeira, MSc in Product Development and Engineering, Polytechnic of Leiria, Advisor: Fábio Simões, Artur Mateus
59. Aplicação de Impressão 3D na Construção Civil: Caso de Estudo de Mobiliário Urbano, Student: Francis Giovanni Brun, MSc in Engenharia Civil - Construções Civas, Polytechnic of Leiria, Advisor: Fábio Simões, Artur Mateus
60. CircularSeas, Student: Ana Maria Matias da Costa, MSc in Product Development and Engineering, Polytechnic of Leiria, Advisor: Fábio Simões, Artur Mateus
61. Direct digital manufacturing of products based on high content of stone powder, Student: João Miguel Júnior Loja Pereira, MSc in Product Development and Engineering, Polytechnic of Leiria, Advisor: Artur Mateus
62. International SMA Behavioural Implications: An Analysis of the Mediating and Moderating Effects, Student: Beatriz Isabel Ferreira da Silva, MSc in International Business, Polytechnic of Leiria, Advisor: Ana Lisboa
63. Sustainability communications and the ceramic tile industry, Student: Nazanin Sabet, MSc in Product Development and Engineering, Polytechnic of Leiria, Advisor: Fábio Simões, Ana Lisboa
64. Performance of multinational corporations (MNCs): The influence of research and development (R&D) capability and marketing capability (MC), Student: Eidyx Marlene Castillo Martinez, MSc in International Business, Polytechnic of Leiria, Advisor: Ana Lisboa
65. Thermal Insulation Material Containing Reed Fiber Filler, Student: Mikita Baltrushevich, MSc in Engenharia Civil – Construções Civas, Polytechnic of Leiria, Advisor: Florindo Gaspar
66. Avaliação do comportamento estrutural da Ponte Pedonal, Ponte Bairro dos Anjos Leiria, Student: Guilherme Rodrigues Christo, MSc in Engenharia Civil – Construções Civas, Polytechnic of Leiria, Advisor: Florindo Gaspar
67. Modeling Airborne Clean Energy Systems, Student: Tiago Romeiro Marques Pereira, MSc in Product Development and Engineering, Polytechnic of Leiria, Advisor: Paula Faria
68. Thermoforming of Components over Reconfigurable Pin Moulds, Student: Anmol Gupta, MSc in Product Design Engineering, Polytechnic of Leiria, Advisor: Fábio Simões, Artur Mateus
69. Large-scale additive manufacturing for composites, Student: Patricio Alejandro Banda Vargas, MSc in Product Design Engineering, Polytechnic of Leiria, Advisor: Fábio Simões, Artur Mateus
70. Product Design - Cases development in internship context, Student: Carolina Maria Gonçalves Fidalgo, MSc in Product Design Engineering, Polytechnic of Leiria, Advisor: Fábio Simões

71. Design of a novel bike lock, Student: Frank Rogier Meiresonne, MSc in Product Design Engineering, Trek Bicycles, Netherlands, Advisor: Fábio Simões
72. Projeto de mobiliário inovador, Student: Liliana Rita Marques Lopes, MSc in Product Design Engineering, Mitomóvel, Lda, Advisor: Fábio Simões
73. Product Innovation for Food Packaging Industry, Student: Pramol Jain Mandya Nagesh, MSc in Product Design Engineering, Plásticos Futura, Lda, Advisor: Fábio Simões, João Matias
74. Development of a numerical model for tracheal stents simulation, Student: Miguel Ângelo Oliveira Ameixas, Universidade Nova de Lisboa, Advisor: Rui Ruben; Marta Carvalho (UNL)
75. Structural and thermal design of a particle detector for aerospace use, Student: Nuno Miguel Martinho Roque, MSc in Product Design Engineering, University of Bergen, Norway, Advisor: Fernando Batista
76. Comparative Study on Mechanical Strength of Acrylonitrile Butadiene Stereyne [ABS] and Acryonitrile Stereyne Acrylite [ASA] extruded filaments, Student: Yadukumar Surya, Polytechnic of Leiria, Advisor: João Matias
77. Computational Case Study to Examine the Deficiencies of NNPB Plunger Production Processes in the Glass Industry, Student: Vrushaba Sachidanand Pattanshetty, Polytechnic of Leiria, Advisor: João Matias
78. Modelling Airborne Clean Energy Systems, Student: Tiago Romeiro Marques Pereira, University of Coimbra, Advisor: Paula Pascoal-Faria
79. Gestão da manutenção: melhoria num processo de tratamento superficial química por oxidação a negro, Student: Gustavo Pasqualini Barros da Silva, Polytechnic of Leiria. Advisor: António Mário Pereira
80. ABLEFIT. Student: Tomás Panão, MSc in Mechanical Engineering, ISEC. Advisor (co): Cândida Malça
81. 3D Printing on a Large Scale for the Construction, Student: Ludmila Vago Gomes, MSc in Product Design Engineering, Polytechnic of Leiria, Advisor: Florindo Gaspar, Fábio Simões.
82. Representação Tridimensional e Realidade Virtual como ferramenta na Visualização Arquitetónica, Student: Madalena Nunes Palmeira, MSc in Product Design Engineering, Polytechnic of Leiria, Advisor: Fábio Simões
83. Application of membranes for clarification and/or purification of a minicircular DNA vector, Student: Daniela Carvalho, Universidade da Beira Interior, Advisor: Joana Valente
84. Numerical simulation of tracheal stents, Student: João Brites Pinto, Polytechnic of Leiria, Advisor: Rui Ruben
85. Relation between porosity and cortical bone properties using homogenization, Student: Inès Cousin, University Hauts-de-France, France, Advisor: Rui Ruben; Daniel Coutellier (University Hauts-de-France, France)
86. Development of an electric concept-motorbike: frame design and numerical analysis, Student: Nicolas Van Waeyenberge, Ghent University, Belgium,

- Polytechnic of Leiria, Advisor: Rui Ruben; Joel Vasco; Ludwig Cardon (Ghent University, Belgium)
87. Estudo e projeto de diferencial para funcionamento Torque Vectoring, Student: Hugo Ricardo Oliveira Lopes, Polytechnic of Leiria, Advisor: Fernando Batista, Carlos Manuel Pereira Costa e Sousa
 88. Desenvolvimento do chassis de um reboque para transporte de veículos ligeiros, Student: Mariana Lourenço Fernandes, Polytechnic of Leiria, Advisor: Fernando Batista, Sérgio Pereira dos Santos
 89. Desenvolvimento de chassis para veículo FStudent em materiais avançados, Student: Rodrigo Francisco Cerejo da Silva, Polytechnic of Leiria, Advisor: Fernando Batista, Sérgio Pereira dos Santos
 90. Assistive technology for the visually impaired: How to provide independence and ease to meal preparation? Student: Ina Serafimova, Polytechnic of Leiria, Advisor: João Matias
 91. Product innovation for food packaging industry through engineering methods, Student: Pramol Jain Mandya Nagesh, Polytechnic of Leiria, Advisor: João Matias, Fábio Simões
 92. Influência do Masterbatch em Peças Moldadas por Injeção, Student: Tiago Alexandre Soares dos Santos, Polytechnic of Leiria. Advisor: António Mário Pereira, Pedro Martinho
 93. Sistema de Porta de Fole Origami, Student: Mariana Oliveira Faria, MSc in Product Design Engineering, S.A., Advisor: Fábio Simões, Fátima Barreiros
 94. Otimização da densidade em aglomerados de fibras de madeira de média densidade (MDF), Student: Cristina Maria da Silva Bento, MSc em Engenharia Mecânica – Produção Industrial, Valbopan, S.A., Advisor: Fábio Simões, Bruno Gonçalves
 95. Otimização do Corte de Barras Laminadas a Quente, Student: Fábio André Pereira Marques, MSc em Engenharia Mecânica – Produção Industrial, Bollinghaus, S.A. , Advisor: Fábio Simões, Paulo Novo
 96. Production of chromatographic supports by 3D printing, Student: Priscilla Cravo, Universidade da Beira Interior, Advisor: Joana Valente
 97. Desenvolvimento de nanoconjugados cerâmicos com mcDNA para o tratamento do cancro do colo do útero, Student: Matilde Costa, Universidade da Beira Interior, Advisor: Joana Valente, Tatiana M. Fernandes Patrício
 98. Placas de isolamento térmico com base em resíduos de casca de arroz e cana, Student: Alana da Silva, MSc in Engenharia Civil – Construções Cívicas, Polytechnic of Leiria, Advisor: Florindo Gaspar
 99. Mechanical properties characterization of Nylon 12CF used in MEX process, Student: Pedro Garcia, Polytechnic of Leiria, Advisor: Rui Ruben; Joel Vasco
 100. Modeling and simulation of trachea with stent, Student: André Mendes Rocha, Universidade Nova de Lisboa, Advisor: Rui Ruben, Marta Carvalho (UNL)
 101. Design of cold formed profiles using the EMM Effective Modulus Method, Student: Cristiano Monteiro, Polytechnic of Leiria, Advisor: Rui Ruben; Luis Prola

102. Race Car Dynamics Optimization Considering Suspension and Steering Effects, Student: Mário Rui Barbosa Vaz, Polytechnic of Leiria, Advisor: Fernando Batista, Sérgio Pereira dos Santos
103. Desenvolvimento e construção de um macroperfurador de manutenção rápida, Student: João Miguel da Silva Silvestre, Polytechnic of Leiria, Advisor: Fernando Batista, Carlos Manuel Pereira Costa e Sousa
104. Otimização do Corte de Barras Laminadas a Quente, Student: Fábio André Pereira Marques, MSc em Engenharia Mecânica – Produção Industrial, Bollinghaus, S.A., Advisor: Fábio Simões, Paulo Novo
105. Magnesium-based biodegradable scaffolds for bone tissue regeneration, Student: Beatriz Oliveira, Biomedical Engineering, UNL, Advisor: Carla Moura
106. Estudo e Implementação da Metodologia Lean ao Processo de Produção de Fiambres Para Fatiar, Nobre Alimentação SA, Student: António Sérgio Marques Valente, Advisor: Paulo Novo
107. Development of a low-cost and open-source stimulator for applications in tissue engineering, Student: Hugo da Mota Branco Teixeira, University of Coimbra, Advisor: Paula Pascoal-Faria
108. A case study of a dynamic wrist splint in response to an occupational deficit: from modelling to 3D printing, Student: Maria Rabaça Figueiredo, Polytechnic of Leiria and University of Burgos, Spain, Advisor: Paula Pascoal-Faria
109. Computational Modelling for bone tissue Engineering: A fluid dynamics analysis for iliac bone scaffolds, Student: Miguel Alexandre Gomes Duarte, University of Coimbra, Advisor: Paula Pascoal-Faria
110. The Influences of Personality Traits on Social Entrepreneurship Intentions - A comparison study between Turkey and Portugal, MSc in Marketing and Communication, Oikonomiko Panepistemio Athenon, Grécia, Advisor: Ana Lisboa
111. Análise comparativa do desempenho de implantes traqueobrônquicos, Student: João Pinto, MSc in Engenharia Mecânica – Projeto Industrial, Polytechnic of Leiria, Advisor: Rui Ruben
112. Desenvolvimento de uma estrutura de para mota elétrica, Student: Pedro Sousa, MSc in Engenharia para a Fabricação Digital Direta, Polytechnic of Leiria, Advisor: Rui Ruben, Joel Vasco
113. Produção e análise de implantes traqueobrônquicos por fabricação aditiva, Student: Ivana Ribeiro, MSc in Engenharia Mecânica – Projeto Industrial, Polytechnic of Leiria, Advisor: Rui Ruben, Carlos Campos
114. Otimização Topológica de Componentes Estruturais, Student: Lucas Oliveira, MSc in Product Development and Engineering, Polytechnic of Leiria, Advisor: Rui Ruben
115. Product placement: Percepção entre diferentes culturas, Student: Machado, G., MSc in Comunicação e Media, Polytechnic of Leiria, Advisor: Ana Lisboa
116. Modelação para fabrico de estrutura Industrial de madeira com recurso à tecnologia BIM, Student: Albertino Dos Prazeres Ferreira, MSc in Engenharia Civil – Construções Civis, Polytechnic of Leiria, Advisor: Florindo Gaspar

117. The impact of 3D concrete printing on building design using BIM methodology, Student: Marina Januário da Silva, MSc in Product Development and Engineering, Polytechnic of Leiria, Advisor: Florindo Gaspar
118. Desenvolvimento de um modelo numérico para a simulação de traqueias com implantes, Student: Miguel Ameixas, MSc in Engenharia Mecânica, Nova University of Lisbon, Advisor: Rui Ruben, Marta Carvalho
119. O impacto das atividades de marketing no Instagram no comportamento do consumidor e na lealdade à marca, Student: Gondaski, A., MSc in Comunicação e Media, Polytechnic of Leiria, Advisor: Ana Lisboa
120. Implementação de um sistema de gestão da qualidade em contexto da indústria 4.0, Student: Sara da Silva Simões Lopes, Polytechnic of Leiria
121. Manutenção na indústria 4.0, Student: Nelson Coelho Afonso Gomes, Polytechnic of Leiria

7.4 Others

1. Desenvolvimento de implantes temporários biodegradáveis para a regeneração da cartilagem, Student: Emanuela Tomás, Projeto/Estágio da Licenciatura em Eng. Biomédica (Ramo de Bioeletrónica), Advisor: Cândida Malça
2. In situ crosslinking effect on the degradation rate of gelatina electrospun meshes, Student: Marial Boal, PLeiria, Advisor: Juliana Dias
3. Produção e caracterização de biocompósitos com alendronato para o tratamento da osteoporose, Student: Mariana Agostinho, internship in Biomecânica, PLeiria, Advisor: Milena Vieira; Sara Biscaia
4. Características mecânicas e morfológicas do Osso, Student: João Pedro Lopes Moreira, internship in Biomecânica, PLeiria, Advisor: Carla Moura
5. Desenvolvimento de implantes temporários para TMJ, Student: Daniela Alexandra Trindade, internship in Biomecânica, PLeiria, Advisor: Carla Moura
6. Polyethylene glycol diacrylate-based hydrogels: monitorization of its mechanical properties for optimal storing conditions, a new optimization and introductory tests under native conditions, Student: Francisco Machado Dutra, internship in Biomecânica, PLeiria, Advisor: Carla Moura
7. Internship. Student: João Carreira, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
8. Internship. Student: Diogo Adão, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
9. Internship. Student: Jorge Gato, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
10. Internship. Student: Vitor Cordeiro, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
11. Financial issues of IDI projects, Student: Inês Pires, Advisor: Tatiana Patrício

12. Relatório do Estágio desenvolvido no âmbito da Componente de Formação em Contexto de Trabalho, Student: Tânia Filipa Domingues Ferreira, Curso Técnico Superior Profissional em Instrumentação Biomédica, Advisor: Carla Moura
13. Produção e avaliação de propriedades de scaffolds fotopolimerizáveis, Student: Vera Catarina Vasconcelos Teixeira, internship in Bioengenharia, Escola Superior de Engenharia de Coimbra, Advisor: Carla Moura
14. Caracterização de celulose vegetal para aplicação em bioscaffolds, Student: Maria Eduarda Delfim Oliveira, intership in Bioengenharia, Escola Superior de Engenharia de Coimbra, Advisor: Carla Moura
15. Introduction to additive Manufacturing of Biomaterials and its characterization, Student: Ricardo Casqueiro, rotação laboratorial, Advisor: Carla Moura
16. Internship. Student: Clément Skrjanc, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
17. Internship. Student: Florian Hautier, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
18. Internship. Student: Victor Bucholz-Vernier, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
19. Internship. Student: Bruno Lourenço, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
20. Internship. Student: Pedro Pereira, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
21. Internship. Student: Pedro Pereira, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
22. Uma Introdução aos Métodos Analíticos e Numéricos para a Simulação Computacional da Dinâmica de Fluidos: Aplicação à Injeção Assistida por Água em Moldes (WAIM), Student: Eurico Carnall Figueiredo, Matemática Aplicada à Tecnologia e à Empresa, Escola Superior de Engenharia de Lisboa, Advisor: Nuno Lopes; Ricardo Enguiça; Tiago Azevedo; Paula Pascoal-Faria
23. Biotechnological platform to produce p53 encoding pDNA, Student: Tiago Carreira, Biotechnology degree, ESTM, PLeiria, Advisor: Joana Valente
24. Internship – Araújo & Silva, Student: Carlos Daniel Lisboa de Sousa, Licenciatura em Engenharia Mecânica, PLeiria, Advisor: Fábio Simões
25. Internship – Carlos Cozinheiro-Construções Metálicas LDA, Student: Mário Jorge De Oliveira Ferreira, Licenciatura em Engenharia Mecânica, PLeiria, Advisor: Fábio Simões
26. Internship – Carlos Cozinheiro-Construções Metálicas LDA, Student: Ricardo Luis da Cruz Batista Guedes, Licenciatura em Engenharia Mecânica, PLeiria, Advisor: Fábio Simões
27. Internship – 3DTEch, Student: Hélder Gonçalves Alves, Curso Técnico Superior Profissional em Fabricação Automática, Advisor: Fábio Simões

28. Introdução à Gestão de Projetos Científicos, Student: Sofia Dias Alves, Engenharia e Gestão Industrial, Advisor: Carla Moura
29. Desenho de scaffolds inspirados na natureza para aplicações ósseas, Student: Laura Santos Carvalho, Bioengenharia, Escola Superior de Engenharia de Coimbra, Advisor: Carla Moura
30. Otimização do desenho de scaffolds para substituição do disco da articulação temporomandibular, Student: Rita Campos Toscano de Melo, Bioengenharia, Escola Superior de Engenharia de Coimbra, Advisor: Carla Moura
31. Celulose Bacteriana em função de uma sociedade mais ecológica, Student: Filipa Isabel Pereira Lima, Bioengenharia, Escola Superior de Engenharia de Coimbra, Advisor: Carla Moura
32. Cannabis in Therapeutics, Student: Ricardo Quintos, Biomechanics BSc final project, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben, Carlos Campos
33. Internship. Student: Ana Cruz, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
34. Internship. Student: Marcelo Pereira, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
35. Internship. Student: Marco Caetano, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
36. Internship. Student: Carolina Mendes, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
37. Internship. Student: Maxence Rigaud, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
38. 3D printed structures immobilized with different amino acids as plasmid DNA absorbers, Student: Andreia Pedro, Biotechnology degree, ESTM, PLeiria, Advisor: Joana Valente
39. Adsorption behaviour of arginine 3D printed structures using different nucleic acids- classification, Student: Bárbara Ferreira, Biotechnology degree, ESTM, PLeiria, Advisor: Joana Valente
40. An Introduction to Scaffold Design using Topology Optimization Methods, Student: Jan Marxen, Projeto Final de Curso Matemática Aplicada à Tecnologia e à Empresa, ISEL-IPLisboa, Advisor: Paula Pascoal-Faria
41. Desenvolvimento de um sistema de deposição seletiva de grânulos, partículas pós, incluindo o projeto de sistemas de deposição e sua aplicação a uma máquina CNC, Student: Nuno Bento Agostinho, Licenciatura em Engenharia Mecânica, Polytechnic of Leiria, Advisor: Fábio Simões
42. Adsorption behaviour of arginine 3D printed structures using different nucleic acids, Student: Bárbara Ferreira, Politécnico de Leiria, Advisor: Joana Valente
43. 3D printed structures immobilized with different amino acids as plasmid DNA absorbers, Student: Andreia Pedro, Politécnico de Leiria, Advisor: Joana Valente
44. Ortótese customizada para mão, Student: Paulo Alexandre Cunha Oliveira, CDRSP - IPL
45. Development of calibration strategies of a test-bench for heavy-duty engines, Student: Bram Verlinden, BSc Final Project within Erasmus between Thomas

- Moore University of Applied Sciences Belgium, and Polytechnic of Leiria
Advisor: Olivier R. Gouveia, Advisor: Pedro Carreira, Carlos Campos
46. Reorganização de Layouts, Student: Telma Pinto, Licenciatura em Engenharia e Gestão Industrial, Yazaki Saltano de Ovar, Advisor: Paulo Novo
 47. Software de Planeamento de Produção e Lean Manufacturing, Student: Marta Pirraça, Licenciatura em Engenharia e Gestão Industrial, SOCEM MS, Advisor: Paulo Novo
 48. Gestão Visual numa empresa de moldes, Student: Maria Grazina, Licenciatura em Engenharia e Gestão Industrial, MD Moldes Lda., Advisor: Paulo Novo
 49. Otimização de Processos com Aplicação de Ferramentas Lean, Student: Miguel Silva, Licenciatura em Engenharia e Gestão Industrial, Simplastic, Lda., Advisor: Paulo Novo
 50. Aplicação de ferramentas de melhoria contínua na Indústria dos Plásticos, Student: Duarte Pereira, Licenciatura em Engenharia e Gestão Industrial, Bourbon Automotive Plastics, Advisor: Paulo Novo
 51. Balanceamento e melhoria de uma linha de montagem, Student: João Mascate, Licenciatura em Engenharia Mecânica, Hitachi Astemo, SA, Advisor: Paulo Novo
 52. Injeção de Plásticos, Qualidade, Gestão da Produção e Digitalização de Processos, Student: Mariana Silva, Licenciatura em Engenharia Mecânica, VIPEX – Comércio e Indústria de Plásticos, SA, Advisor: Paulo Novo
 53. Receção e Oficina Automóvel, Lean Manufacturing e Qualidade, Student: João Duarte, Licenciatura em Engenharia Mecânica, Socicentro, Lda, Advisor: Paulo Novo
 54. An Introduction to Scaffold Design using Topology Optimization Methods, Student: Jan Esquível Marxen, Polytechnic of Lisbon, Advisor: Paulo Novo
 55. Internship. Student: Tiago Freire, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
 56. Internship. Student: Martim Chaves, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
 57. Internship. Student: Diogo Rodrigues Fernandes, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
 58. Internship. Student: Oleg Filvarkiv, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
 59. Internship. Student: Marco Bachubay da Silva, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
 60. Produção e avaliação de propriedades de scaffold condutores, Student: João Castanhola Batista Curado, Projeto/Estágio da Licenciatura em Eng. Biomédica – Bioeletrónica do ISEC. Advisor: Cândida Malça
 61. SMED Aplicado ao sector de laminagem – Trem contínuo na empresa Böllinghaus Steel, Student: Dina Gopali Guapaz Luna, Licenciatura em Engenharia Mecânica, Bollinghaus Steel, S.A., Advisor: Fábio Simões

62. 3D printed PCL structures with tyrosine ligands for pDNA adsorption, Student: Filipe Morgado, Politécnico de Leiria, Advisor: Joana Valente
63. Silver nanoparticles: Structures applied to cancer diagnosis and treatment, Student: Lara Ramalheite, Universidade da Beira interior, Advisor: Joana Valente
64. Therapeutic strategy against cervical cancer based using metallic particles, Student: Tânia Soares, Universidade da Beira interior, Advisor: Joana Valente
65. Targeted delivery of the p53 supercoiled gene using chitosan nanoparticles, Student: Beatriz Silva, Universidade da Beira interior, Advisor: Joana Valente
66. Equipamento de manufatura aditiva para aplicações Bio, Student: Juliano Mak Babaroca, CDRSP – IPL, Advisor: Pedro Carreira, Carlos Campos
67. Identificação e manuseamento em tempo real com sistema antropométrico, Student: João Manuel Oliveira Moura da Costa, CDRSP – IPL, Advisor: Pedro Carreira, Carlos Campos
68. Otimização de Parâmetros de Suspensão com recurso a Algoritmos Genéticos Automotive Engineering BSc final project, Student: Miguel Peixoto, ESTG, Polytechnic of Leiria, Advisor: Olivier R. Gouveia, Fernando Batista, Advisor: Paulo Novo
69. Implementação do OEE através do MES, Student: Rafael Mendes, Licenciatura em Engenharia Mecânica, Sumol+Compal, SA, Advisor: Paulo Novo
70. Balanceamento de uma Linha de Escolha de Vidro, Student: Telmo Ferreira, Licenciatura em Engenharia e Gestão, Matcerâmica-Fabrico de Louça SA, Advisor: Paulo Novo
71. Atividades desenvolvidas no departamento da produção, Student: Joana Oliveira, Licenciatura em Engenharia e Gestão Industrial, Plastimago – Transfor. de Plásticos, Lda, Advisor: Paulo Novo
72. Aplicação de Ferramentas Lean, Student: André Silvestre, Licenciatura em Engenharia e Gestão Industrial, Tekever UAS S.A, Advisor: Paulo Novo
73. Aplicação de Ferramentas Lean, Student: André Santos, Licenciatura em Engenharia e Gestão Industrial, F. Caixeiro – Industrial Solutions, Lda, Advisor: Paulo Novo
74. Planeamento e Controlo da Produção, Student: Francisco Baptista, Licenciatura em Engenharia e Gestão Industrial, DISTRIM 2, Lda – Grupo Vangest, Advisor: Paulo Novo
75. Estudo e otimização dos parâmetros de maquinação para fabrico de eléctrodos de grafite, Student: Vera Silva, Licenciatura em Engenharia Mecânica, Planimolde SA, Advisor: Paulo Novo
76. Internship. Student: Gabriel Carvalho, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
77. Internship. Student: Tomás Dias, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
78. Internship. Student: Mónica Duarte, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben

79. Internship. Student: Martin Couvreur, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
80. Internship. Student: Adrien Ashrafinia, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
81. Internship. Student: Luís Filipe Ventura de Oliveira, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
82. Internship. Student: Antoine Catalogne ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
83. Biomaterials for bone regeneration, Student: João Curado, Final Project BSc Biomedical- Bioelectronics Engineering, ISEC, Advisor (co): Carla Moura
84. Obtenção rápida de ortóteses customizadas e sensorizadas, Students: João Martins, Final Project BSc Biomedical- Bioelectronics Engineering, ISEC, Advisor (co): Carla Moura
85. Development of an Electrode for Wastewater Treatment Using Residues from ISEC, Student: João Bento e Temo Flório, Final Project BSc Mechanical Engineering, ISEC, Advisor: Cândida Malça
86. Innovative Amenities Packaging Machine, student: Miguel Maia e Simões Marques, Final Project BSc Mechanical Engineering, ISEC, Advisor: Cândida Malça
87. Produção, caracterização e otimização de scaffolds de óxido de magnésio e sulfato de magnésio biocompatíveis e biodegradáveis para recuperação de lesões osteocondrais, student: Sofia Campos e Joel de Sá, Final Project BSc Electromechanical Engineering, ISEC, Advisor: Cândida Malça
88. Obtenção rápida de ortóteses customizadas e sensorizadas em ambiente hospitalar, Student: João Alexandre Lopes Martins, Final Project BSc Biomedical- Bioelectronics Engineering, ISEC, Advisor: Cândida Malça
89. Scaffolds de hidroxiapatita para regeneração da cartilagem, Student: Joel Bicho e Simão Magalhães, Final Project BSc Electromechanical Engineering, ISEC, Advisor: Cândida Malça
90. Optimisation of a Double-Chamber Perfusion Bioreactor for Cell Culture: Geometry, Mechanical Stimulation, and Instrumentation Development, Student: Mário Loureiro e Diogo Palaio, Final Project BSc Electromechanical Engineering, ISEC, Advisor: Cândida Malça
91. Construção de uma impressora 3D de pó e jato de tinta (3DP) para Binder, Student: Paulo Duarte e Jorge Martins, Final Project BSc Electromechanical Engineering, ISEC, Advisor: Cândida Malça
92. Auxílio à prevenção de úlceras de pressão e à mobilidade de pacientes acamados, Student: Luan Oliveira, Final Project BSc Mechanical Engineering, ISEC, Advisor (co): Cândida Malça
93. Parametrização de Fabrico Aditivo pelo Processo DED, Student: Fábio Daniel Caldeira Teixeira, Licenciatura em Engenharia Mecânica, Politécnico de Leiria, Advisor: Fábio Simões

94. Metodologias de Impressão 3D para a produção de estruturas cromatográficas, Student: Rodrigo Vieira, Universidade da Beira interior, Advisor: Joana Valente
95. Impressão 3D para a terapia do cancro do colo do útero, Student: Sara Calado, Universidade da Beira interior, Advisor: Joana Valente
96. Biofuncionalização de electrospun meshes, Student: Daniela Gonçalves, Licenciatura em Biomecânica, CDRSP – IPL, Advisor: Rui Ruben, Juliana Dias
97. Scaffolds 3D baseados em malhas obtidas por electrospinning para úlceras do pé diabético, Student: Nikoletta Varha, Licenciatura em Biomecânica, CDRSP – IPL, Advisor: João Matias, Juliana Dias
98. Mapeamento do fluxo de valor de uma linha de reciclagem, Student: Ricardo Ascenso Inácio, Licenciatura em Engenharia e Gestão Industrial, Sirplaste SA, Advisor: Paulo Novo
99. ChangeOver Management in the Production System, Student: José Rafael da Silva Horta, Licenciatura em Engenharia e Gestão Industrial, Schaeffler Portugal, Unipessoal, Lda., Advisor: Paulo Novo
100. Atividades Desenvolvidas no Departamento de Métodos, Student: Joana Carvalho Lopes Licenciatura em Engenharia e Gestão Industrial, Groupe Plastivaloire, Advisor: Paulo Novo
101. Balanceamento do final de linha em uma Indústria automóvel, Student: Guilherme Amorim Elói Campino Licenciatura em Engenharia e Gestão Industrial, Joao de Deus & Filhos, S.A., Advisor: Paulo Novo
102. Aplicação da Metodologia SMED na Vidração - Indústria Cerâmica, Student: Gonçalo Alves Perdigão, Licenciatura em Engenharia e Gestão Industrial, Matcerâmica-Fabrico de Louça SA, Advisor: Paulo Novo
103. Aplicação da metodologia Lean Manufacturing num armazém da Manutenção, Student: Carolina Félix Marques, Licenciatura em Engenharia e Gestão Industrial, BA Glass Portugal SA, Advisor: Paulo Novo
104. Estudo e implementação de ferramentas Lean ao processo de produção de componentes plásticos, Student: Carolina de Jesus Pereira, Licenciatura em Engenharia e Gestão Industrial, Simplastic, Lda., Advisor: Paulo Novo
105. A Manutenção na indústria de panificação, Student: Gonçalo da Silva Gregório, Licenciatura em Engenharia Mecânica, Panidor SA., Advisor: Paulo Novo
106. Conceção e Desenvolvimento de Diversos Equipamentos Industriais, Student: Mariana Teresa de Paiva Morgado, Licenciatura em Engenharia Mecânica, HRV – Equipamentos De Processo, S.A., Advisor: Paulo Novo
107. Projeto Mecânico de uma Célula Automática e Aplicação do SMED, Student: Francisco Ricardo Carreira, Licenciatura em Engenharia Mecânica, Erofio Atlântico, SA, Advisor: Paulo Novo
108. Atividades desenvolvidas na área da Manutenção, Student: André Lopes, Licenciatura em Engenharia Mecânica, Gasogás Transportes e Logística, Lda., Advisor: Paulo Novo
109. Internship. Student: Mafalda Ganchas, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben

110. Internship. Student: João Margarido, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
111. Internship. Student: Catarina Brites, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
112. Internship. Student: Mário Jesus, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
113. Internship. Student: João Rebelo, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
114. Internship. Student: Alexandre Jorge Zambujo, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben
115. Internship. Student: Beatriz Fernandes Carvalho, ESTG, Polytechnic of Leiria, Advisor: Rui Ruben

8 PhD JURIS

SUMMARY:

2018	2019	2020	2021	2022	2023	Total
5	11	6	1	3	3	29

Currently, our institution does not offer doctoral programs. All jury invitations have been extended by both national and international institutions. We anticipate receiving approval in the near future to offer PhD programs at our institution.

9 DISSEMINATION

1. International Conference on Direct Digital Manufacturing and Polymers, ICDDMAP 2019
(<https://icddmap.ipleiria.pt/icddmap-2021/>)
2. International Conference on Direct Digital Manufacturing and Polymers, ICDDMAP 2021
(<https://icddmap.ipleiria.pt/icddmap-2021/>)
3. Materiais 2022, XX congresso da sociedade portuguesa de materiais, XI international materials symposium, II iberian congress on materials science and technology
(<https://spmateriais.pt/site/materiais-2021/>)
4. Sustainable and Digital Building 2020
(<https://sdb.ipleiria.pt/>)
5. Sustainable and Digital Building 2022
(<https://sdb.ipleiria.pt/>)
6. RESIM Conference 2022
(<https://resim.ipleiria.pt/>)
7. 9th Meeting of ENURS 2023
(<https://enurs.ipleiria.pt/>)
8. Conference on Progress in Digital and Physical Manufacturing, ProDPM 2019
(<https://prodpm.ipleiria.pt/2019/index.html>)
9. Conference on Progress in Digital and Physical Manufacturing, ProDPM 2021
(<https://www.ipleiria.pt/estg/event/http-www-prodpm-ipleiria-pt/>)
10. 12º Congresso Nacional de Mecânica Experimental, CNME 2020
(<https://iconline.ipleiria.pt/handle/10400.8/7371>)
11. 15th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering and the 3rd Conference on Imaging and Visualization, CMBBE 2018
(<https://cmbbe2018.tecnico.ulisboa.pt/>)

10 INTERNATIONALIZATION

The Centre is and has been strongly engaged with several international and national research networks and organizations:

- **GARPA:** Global Alliance of Rapid Prototyping Associations
- **EU-MATHS-IN:** European Network of Mathematics for Industry and Innovation through the Portuguese node PT-MATHS-IN (Rede Portuguesa para a Indústria e Inovação)
- **ISBS:** International Society of Biomechanics in Sports
- **GBATA:** Global Business and Technology Association
- **ESEIA:** European Sustainable Energy Innovation Alliance
- **EURAFITAR:** European Association for Innovation and Technologies and Applied Research
- **AMA:** American Marketing Association
- **PAMI:** Portuguese additive manufacturing initiative
- **SPB:** Sociedade Portuguesa de Biomecânica (Portuguese Society of Biomechanics)
- **IPQ:** Instituto Português da Qualidade (Portuguese Institute For Quality)
- **PRODUTECH:** Pólo das Tecnologias de Produção (Production Technologies Cluster)
- **POOL-NET:** Cluster of Engineering & Tooling Competitvity
- **OPEN:** Business Specific Opportunities

PART C

PROTOTYPES AND SOFTWARE TOOLS

11 PROTOTYPES AND SOFTWARE TOOLS

Although not formally declared as a research output, the development of models, computational applications or laboratory prototypes is an integral part of the work carried out by the members of the CDRSP-IPLeiria. Some of the most laboratory prototypes and relevant computational applications are:

AM LASAR SYSTEM - This system is an additive manufacturing large scale robotic apparatus which allows the fabrication of large-scale eco-composites parts in a wide range of waste materials (wood, tyre, cork...), incorporating waste into recycled polymer matrix, contributing for a more sustainable environment.

AM4COMPOSITES - Additive manufacturing system to create composite structures by processing continuous carbon fibers (in desired direction) coated with a thermoplastic polymer.

BIODISCUS.SYSTEM - This is a novel testing apparatus enabling the integration and synchronization of the different stages of chewing to evaluate the integrity of designed 3D biostructures to replace the temporomandibular joint disc.

BIOMATE SYSTEM - This is a novel additive bio-manufacturing apparatus enabling the integration and synchronization of the different stages of manufacturing, control, and culture of 3D scaffolds with reduced manual intervention. This system integrates a deposition module (DEM) combining bioextrusion with deposition of soft biomaterials with or without drugs, an electrospinning module for producing nanofibers layers (SPIN), and a computer aided real-time optimization module (COM) to perform (in-situ) both the optimization of the processing parameters and the automatic 3D reconstruction of scaffolds morphology in a synchronized manner.

BIOREATOR DT.2 - Optimized version of a homemade digital twin model of a novel bioreactor that allows the optimization of the application of perfusion and electromagnetic stimuli.

CERAMIC EXTRUSION SYSTEM - This system allows the fabrication of structures in a wide range of ceramic materials comprising a deposition system acted by a pneumatic mechanism and a developed appropriate computational tool to control the hardware of the extrusion system.

CERAMICS MM Toolbox - This is a homemade computer tool to assist the layer-by-layer fabrication of multimaterial ceramic structures.

COMBio Toolbox - This is a homemade computer tool to perform (in-situ) both the optimisation of the processing parameters and the automatic 3D reconstruction of biostructures morphology in a synchronized manner.

GyroidSTL - A Matlab toolbox to convert Gyroidal-cuboidal patch structures in STL surfaces.

HERCULES APPLICATION SOFTWARE - This is a homemade software tool to assist the layer-by-layer fabrication of multimaterial bio-structures for tissue engineering.

MOBI Toolbox - A Matlab procedure for finding finite algebraic structures of a given type (Finite Mobi Algebras in Matlab).

MULTIMATERIAL BIOEXTRUDER - This system allows the fabrication of scaffolds in a wide range of polymeric and polymer/ceramic materials and will comprise two different deposition systems: one rotational system for multi-material deposition, acted by a pneumatic mechanism, and another one for a single material deposition using a screw to assist the deposition process.

OPTIMALMOULD - A software tool for the automatic optimised design of an injection mould based on the CAD model of a part and the optimisation of the injection moulding cycle. The software uses different biologically-based multiobjective optimisation algorithms.

SCAFFOLDMULTIDESIGN.2 - Optimized version of a homemade parametric algorithm that supports the manufacturing of multishape curved scaffolds.

ThermoDiCOM - A homemade computational tool for the analysis of optimised regions of thermographic (or thermal), echographic and X-ray images, allowing the combined analysis of thermographic images with other imagery of DiCOM format. It is presented as a means to demystify the technologies of image analysis, a democratization of technological access and finally also the materialization of a new product, which will allow easier access to the analysis of medical images and their crossing with images with an unmistakable gain for users.

PART D
SUMMARY

12 SUMMARY OF THE PERFORMANCE INDICATORS

Established in May 2007, the Centre for Rapid and Sustainable Product Development was evaluated in 2008 as a Centre of Excellence in Mechanical Engineering by the Portuguese Foundation for Science and Technology as a consequence of an international evaluation, which assessed the research performance of the Centre between 2003 and 2006. Since then, the Centre growth very fast and consolidated as a reference research centre in the field of Engineering Sciences and Technologies - Mechanical Engineering and Engineering Systems. In 2018 CDRsp was evaluated as Excellent again.

The results achieved by the Centre in the period 2018-2023, considered for the next evaluation process, show a well stablished research centre that improves continuously its research activity (performance indicators are shown in Table 4).

Table 4: Performance indicators in two periods (2013-2017) and (2018-2023).

	2013-2017	2018-2023
Integrated PhD members (average)	17	17
Number of books	16	13
International Journal Papers	228	253
National Journal Papers	27	11
Book Chapters	36	46
Conference Papers	216	227
Patents	9	19
Invited Communications	148	91
Organised International Conferences	10	11
Post-Doc	6	8
PhD Thesis	5	24
MSc Thesis	62	121



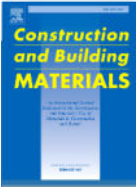


Additionally, the Centre has now a fully dedicated building with well-equipped and modern Laboratories. The list of top-10 international journals for the period 2018-2023 presented in Table 5, shows the multidisciplinary of CDRSP. The number of

integrated PhD numbers was the same during both periods. However, in the beginning of 2024 the integrated PhD members increased to 19.

Table 5: List of top-10 international journals for the period 2018–2023

Journal Cover	Name	Impact Factor	Journal Ranking
	Advanced Materials	ISI IF: 30.849 SJR index: 8.021	Q1 in Mechanical Engineering Q1 in Nanoscience and Nanotechnology Q1 in Materials Science
	Trends in Biotechnology	ISI IF: 21.942 SJR index: 2.681	Q1 in Bioengineering Q1 in Biotechnology
	Science Translational Medicine	ISI IF: 17.161 SJR index: 5.171	Q1 in Medicine
	Material Horizons	ISI IF: 13.540 SJR index: 5.171	Q1 in Mechanics of Materials Q1 in Materials Science
	Technological Forecasting and Social Change	ISI IF: 8.593 SJR index: 2.644	Q1 in Business and International Management Q1 in Management of Technology and Innovation

Table 5 (cont.): List of top-10 international journals for the period 2018–2023

Journal Cover	Name	Impact Factor	Journal Ranking
	Waste Management	ISI IF: 7.145 SJR index: 1.745	Q1 in Waste Management and Disposal
	Acta Biomaterialia	ISI IF: 6.638 SJR index: 1.805	Q1 in Biomaterials Q1 in Biomedical Engineering
	Construction and Building Materials	ISI IF: 6.141 SJR index: 1.888	Q1 in Building and Construction Q1 in Civil and Structural Engineering
	International Endodontic Journal	ISI IF: 5.264 SJR index: 1.506	Q1 in Dentistry
	Chemistry - A European Journal	ISI IF: 5.236 SJR index: 1.681	Q1 in Chemistry Q1 in Organic Chemistry

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CENTRE FOR RAPID AND SUSTAINABLE
PRODUCT DEVELOPMENT

Polytechnic of Leiria
Marinha Grande, Portugal
March, 2024