

CEMMPRE

Centre for Mechanical Engineering, Materials and  
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Scientific outputs

2019

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## Books/Chapters

### International Books

- J. Norberto Pires, *Automação e Controlo Industrial - Indústria 4.0* (1ª edição), Lidel, Lisboa, 2019, ISBN: 978-989-752-412-7

### National Books

- H. Moreira, A. Alençõo, M. Mascarenhas, R. Estácio, *Projeto UNI+i: Programa Integral de Apoio ao Empreendedor Inovador*, UTAD. ISBN: 978-989-704\_376-5

### International Book Chapters

- A. Kotousov, A. Khanna, R. Branco, A. Jesus, J. A. Correia, Review of current progress in 3D linear elastic fracture mechanics in *Mechanical Fatigue of Metals*, Correia, J.A.F.O., Jesus, A.M.P., Fernandes, A.A., Calçada R. (Eds.): *Experimental and Simulation Perspectives, Structural Integrity*, 2019, 7, 16 2019, 125-131. ISBN: 978-3-030-13979-7

- A. P. Piedade, *Hybrid Nanocomposites Produced by Sputtering: Interaction with Eukaryotic and Prokaryotic Cells*, in *Nanocomposites - Recent Evolutions*, Sivasankaran, S. (Ed), IntechOpen, 23 January 2019, 153-160. ISBN: 978-1-78985-012-3, Print ISBN: 978-1-78985-011-6, eBook (PDF) ISBN: 978-1-83881-737-4. <http://doi.org/10.5772/intechopen.79048>.

- A. S. Simões, J. T. Farinha, I. Fonseca, *Ecological Predictive Maintenance (EPM) of Diesel Engines*, *Diesel Engines*. IntechOpen, 2019. ISBN 978-953-51-6846-1.

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## Edition of International Journal

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- A. Fróis, C. Santos Louro, Behaviour of C-based sputtered coatings in artificial saliva, XI Iberian Vacuum Conference (RIVA) and X Iberian Conference on Tribology (IBERTRIB), Sevilla, Spain, 26-28 June 2019 (Oral IB06-06)
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- A. Boyer, H. Laurent, M.C. Oliveira, Comparaison de deux moyens de mesure sans contact pour un dispositif d'expansion équi-biaxiale à haute température, 24ème Congrès Français de Mécanique, CFM2019, Brest, France, 23-30 August 2019.
- A. E. Marques, P. A. Prates, A. F. G. Pereira, M. C. Oliveira, J. V. Fernandes, Hole Expansion Tests of Metal Sheets: Numerical Study, 3rd Symposium on Mechanical Engineering of the 3rd Doctoral Congress in Engineering, DCE19, Porto, Portugal, 27-28 June 2019.
- A. Fróis, L. Cunha, C. Santos Louro, Funcionalization of Orthodontica Alloys with DLC Coatings, 6th ENBENG 2019 - IEEE Portuguese Meeting on Bioengineering, Lisbon, Portugal, 22-23 February 2019
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- A.C. Pinho, F. Fonseca, R. Francisco, P.V. Morais, A.P. Piedade, 3D printing of nanocomposites: bacteria as raw material suppliers, *Materiais 2019, XIX Congresso da Sociedade Portuguesa de Materiais e X International Symposium on Materials*, Reitoria da Universidade Nova de Lisboa, Lisboa, Portugal, 14-17 April 2019.
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- C.M. Andrade, J.R. Barros, D.M. Neto, A. Ramalho, M.C. Oliveira, L.F. Menezes, J.L. Alves, Mechanical characterization of a polyurethane using a hyper-viscoelastic constitutive model, *3rd Doctoral Congress in Engineering, Symposium on Mechanical Engineering, DCE 2019*, Porto, Portugal, 27-28 June 2019.
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- V. Sousa, S. Moniz, C. Silva, P. Neto, C. Silva, Extending the Resource Task Network for scheduling collaborative robots in assembly lines, IO2019, Tomar, Portugal, 2019

## Theses

### PhD theses

- Ana Lúcia de Pereira Neves Messias, Rehabilitation of Kennedy Class I Patients With Removable Partial Dentures: Retrospective Clinical Study and Biomechanical analysis of Implant-Assisted Options, University of Coimbra, January 2019. Supervisors: Pedro Nicolau and Maria Augusta Neto.
- André Filipe Gomes Pereira, On the constitutive parameters identification of metal sheets: bulge, shear and tensile tests, University of Coimbra, March 2019, Supervisors: José Valdemar Bidarra Fernandes and Marta Oliveira.
- Catarina Moreira Marques, Optimization-based approaches to augment the value of integrated decision-making in the chemical-pharmaceutical industry, University of Porto, April 2019, Supervisors: Jorge Pinho de Sousa and Samuel Moniz
- Gustavo Henrique Senna de Freitas Ligeiro de Carvalho, Dissimilar joining by explosivewelding: aluminium to copper and aluminium to steel, University of Coimbra, October 2019. Supervisors: Altino Loureiro and Ricardo Mendes.
- Isabela Maganha, Reconfigurability and Design of Manufacturing Systems, University of Coimbra, April 2019. Supervisor: Cristóvão Silva
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- Marina da Conceição da Silva Matos, Development of more sustainable polymers and composites materials based on 2,5-furandicarboxylic acid, University of Aveiro, March 2019, Supervisors: Paula Andreia Fernandes de Sousa and Armando Jorge Domingues Silvestre

- Pedro Ivo Pinto Oliveira, Fatigue Behavior of laser welded T joints of aluminium alloys, University of Coimbra, October 2019. Supervisors: José Domingos and Altino Loureiro.
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- Wesley Bruno da Silva Machini, Mecanismos de interação de fármacos e proteínas com sequências específicas de DNA detetados in situ com o biossensor eletroquímico modificado com nanoestruturas de DNA, University of Coimbra, 25 September 2019. Supervisor: Ana Brett

## MSc theses

- Abel Loureiro Oliveira, Effect of heat treatment on SLM Maraging 300 steel parts. FEUP, July 2019, Supervisor: Manuel FG Vieira
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- Alexandre Bruno Brandão Esmerado Cavaleiro, Análise Comparativa do Comportamento Biomecânico dos Tecidos Moles na Prática de Basquetebol, University of Coimbra, July 2019. Supervisors: Ana Amaro and Maria António Castro
- Alexandre Daniel Batista Martins, Gestão de Laboratório de Calibração de Equipamentos de Análises de Vibrações, Instituto de Soldadura e Qualidade (ISQ) and Instituto Superior de Engenharia de Coimbra, July 2019. Supervisor: José Torres Farinha
- Ali Payami Golhin, Improvement of the tribological performance of WSCF coatings under dry and lubricated conditions. July 2019, Supervisors: M Evaristo and Albano Cavaleiro.

- Ana Catarina Marques, The Role of Serratamolides Produced by Bacteria of Genus Serratia in Nematicidal Activity, University of Coimbra, July 2019, Supervisor: Diogo Neves Proença and Paula V. Morais
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- Ana Rita Costa Rodrigues, Análise e implementação de melhorias no sistema de gestão de manutenção do Porto de Sines, University of Coimbra, July 2019. Supervisor: Luís Ferreira.
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Politécnico de Leiria, November 2019, Supervisor: Irene Ferreira and Mário S. Correia

- Catarina Raquel dos Santos Gonçalves, Efeito de ambientes hostis na resposta à fadiga de laminado vidro/epóxico, University of Coimbra, July 2019. Supervisors: Ana Amaro and Ricardo Branco

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- Guilherme de Sousa Rodrigues, Comportamento Tribológico de Revestimento do Tipo DLC W Depositados por DCMS e HiPIMS, July 2019. Supervisors: M. Evaristo and F. Fernandes.
- Guilherme Primitivo de Sousa Ferreira, Soldadura por explosão de alumínio a aço inox com placa intermédia, University of Coimbra, September 2019, Supervisors: Ivan Galvão and Ricardo Mendes.
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- Isaias Fernando Muondo Queta, Lean Learning Factory aplicado no processo de ensino aprendizagem nas unidades curriculares Controlo de Produção e Melhoria Contínua, University of Coimbra. July 2019. Supervisor: Cristóvão Silva.
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- Jones Alexandre Barros Soares, Cabotagem como complemento na matriz de transportes: uma análise dos desafios para o seu crescimento no sistema de transportes brasileiro no século 21, Instituto Universitário de Lisboa, October 2019. Supervisors: Luís Ferreira and João Vilas Boas.
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- José Ricardo Pereira Lopes, Otimização da produção e aplicação de ferramentas de melhoria contínua, Instituto Superior de Engenharia de Coimbra, May 2019. Supervisor: José Torres Farinha
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University of Coimbra, September 2019, Supervisor: Diogo Neto and Amílcar Ramalho.

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- Nélia Catarina Franco Melo, Planeamento e Melhoria da Produção na Indústria de Moldes, Mestrado em Engenharia Mecânica - Produção Industrial - Instituto Politécnico de Leiria, May 2019, Supervisor: Irene Ferreira
- Nelson David Mendes, Manutenção de Equipamentos de Eletromedicina em Ambiente Hospitalar: Estágio na ATM, Instituto Superior de Engenharia de Coimbra, May 2019. Supervisors: José Torres Farinha and Fernanda Coutinho.
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- Pedro José Amoroso Feijoo, Influence of Type of Contact and Texture Parameters on the Tribological Performance of Laser-Textured Steel Surfaces, Mestrado Conjunto Europeu em Tribologia de Superfícies e Interfaces, Universidade de Coimbra, July de 2019, Supervisors: Albano Cavaleiro,
- Pedro Miguel Gonçalves Seiça, Atividades no Contexto da Melhoria de Processos Conducentes à Execução de Produtos Técnicos e de Decoração em Materiais Cerâmicos, Polytechnic of Coimbra, May 2019. Supervisor: Luis Roseiro.
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## Software algorithmic

- AutomationML Generator software – data exchange on a production-engineering environment linked to Metal Additive Manufacturing (2019)
- DD3IMP continuous development with implementation of: a volumetric heat source for the numerical simulation of additive manufacturing processes; an algorithm to simulate the fatigue crack growth based on the plastic strain; algorithm for the thermal evolution of the elastic and plastic properties (2019).
- Human activity recognition from event camera data (2019).
- iiwaPy – interface para o controlador Sunrise.OS. Networking, Real-time control, Point-to-point motion, Setters and getters of parameters, Physical interaction (2019). <https://github.com/Modi1987/iiwaPy>
- jnpGcode2Robot: software to translate gcode to robot software (adapted to ABB and Kuka). Continuously developed (2019)
- MATLAB KUKA Sunrise toolbox (2019). <https://www.mathworks.com/matlabcentral/fileexchange/65446-kuka-sunrise-toolbox>.
- Processador multi eixos to generate motion for additive manufacturing machines (including robots). This is an add-on for Autodesk PowerMill (2019)
- Programa para determinar o CTOD plástico a partir de resultados do Método dos elementos finitos - Visual feedback for human-robot interaction (2019)

## Laboratory prototypes

- Cobots - Meet Your New Assistant
- Desenvolvimento de projeto e fabrico de molde protótipo para injeção de polímeros termoplásticos, incluindo testes de injeção, no âmbito da orientação de trabalho mestrado
- Desenvolvimento de um robô manipulador móvel, com controlo por voz, para aplicações de logística industrial. Informação: <http://www.jnorbertopires.pt/kassow-cobot-speech-interface/2>  
<http://www.jnorbertopires.pt/2019/08/31/kassie-cobot-and-activespace-agv1-demo-app/>
- Desenvolvimento de uma mão robótica, impressa em 3D, para aplicações industriais e biomédicas. Informação: <http://www.jnorbertopires.pt/jnphand/>

- Development of a laboratory prototype for testing rubber materials under shear stress, adaptable to a uniaxial test machine (2019)
- Development of a modular FSW tool for lower tool changing operational times and costs (2019).
- Dispositivo Biomecânico para a prática de Ciclismo Adaptado na Classe C5. 2019
- Dispositivo Biomecânico para Controlo da Força em Restaurações Dentárias. 2019
- jnpArm: Desenvolvimento de um robô manipulador de 4 eixos para aplicações biomédicas. Informação: <http://www.jnorbertopires.pt/2020/01/07/jnparm/>
- Máquina de 3 eixos para aplicação de plasma, 2019. Descrição: Máquina de 3 eixos para aplicação de plasma com interface para geração de G-CODE. Link: <https://www.youtube.com/watch?v=ujSpR7vsIDs>

## Pilot Plan

- Desenvolvimento de um laboratório de manufatura aditiva, usando as técnicas WAAM e LMD, para aplicações usando ligas metálicas, 2019.
- Impressão 3D com robô de 7 DOF, 2019. Descrição: impressão de plástico tirando vantagem de 7 graus de liberdade para superfícies curvas e geometrias complexas sem usar reforços. Link: <https://youtu.be/PlosC6YRXUk>
- Projeção de luz estruturada dinâmica em célula de fabrico, 2019 Link: <https://youtu.be/PlosC6YRXUk>

## Patents

- European Patent Application n.º 19194802.5 - Constructive system for the development of tubular curtain walls with thermal radiation capacity - University of Minho - Sandra Carvalho (2019)
- Patente nacional registada nº 115627: INPI, Mecanismo de suporte circular atuado pela gravidade, University of Coimbra - Pedro Matos, Pedro Neto (2019).
- PCT/IB2019/054735: PHOTOPOLYMERIZED BIODEGRADABLE COPOLYMER FORMULATIONS FOR BIOMEDICAL APPLICATIONS - University of Coimbra- Jorge Coelho, Ana Fonseca, Arménio Serra, Ana Catarina Pinho, José Domingos, Ana Maurício, Ana Santos, Sílvia Pedrosa, Mariana Vieira, Rui Alvites, Irina Ferraz (2019)
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- PCT/PT2019/05002: Biomedical Device for Strength Control in Dental Restorations Polytechnic of Coimbra - Luis Roseiro, Marco Silva, Marco Esteves, Rui Falacho (February, 2019). (Classificação Internacional INV. A61C19/04 A61C7/02)
- PI0705295-2 (Brasil) Registrada, Membranas eletroativas nanoestruturadas (MEN), processo de preparo das mesmas e dispositivos contendo as mesmas - Brasil - C. Brett et al, (2019)
- PPP 115781: PROCESSO PARA A PRODUÇÃO DE UMA FORMULAÇÃO QUE CONTÉM POLI(ÁCIDO LÁCTICO) E POLIÉSTERES ALIFÁTICOS E/OU AROMÁTICOS E PRODUTOS QUE A UTILIZAM- SICOR SA - Augusto de Sá Alves da Silva, Rafael Alexandre Costa Rebelo, Jorge Fernando Jordão Coelho, Arménio Coimbra Serra, Camila Tebaldi Marques (2019)
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- PT 110605 A: Distrator Articular da ATM - Um Auxiliar na Fisioterapia de Pacientes com Disfunção Temporomandibular - University of Coimbra / Polytechnic of Coimbra - Júlio Fonseca, Pedro Nicolau, João Oliveira and Luis Roseiro (2019)
- Sistema Automático de Seleção e Tratamento de Efluentes da Lavação da Indústria Corticeira - Polytechnic of Coimbra - Luis Roseiro, Luis Castro, Pedro Beirão, António Amaral, Rui Quitério, Cácio Almeida and Maria Pinheiro