

2008 Scientific Performance

At the end of 2008 there were 25 PhD holding members and 74 researchers and post-graduation students working at the Institute, which in that year were responsible for the publication of 57 articles in peer-reviewed journals (14 other were in press), 7 chapters of internationally edited books, and 5 PhD and 3 MSc theses. Additionally, 91 communications were presented in international scientific conferences, 4 articles were published in national journals and 2 patents were granted to, or applied for, by members of IPC. This output is consistent with the trend of the last years, albeit with some variations from year to year. Concurrently, there was an undeniable consolidation of the international visibility of the members of the Institute, as a result of increasing editorial activities, of the consistent organization of scientific events and invitations for conferences and of the award of international prizes.

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Book Chapters

1. ANTUNES, P.J., DIAS, G.R., COELHO, A.T., REBELO, F., & PEREIRA, T. 2008. **Hyperelastic Analysis of Cork-Polyurethane Gel Composites**

Boukamel, A., Laiarinandrasana, L., Méo, S., & Verron, E. (eds), Constitutive Models for Rubber V. Taylor & Francis p. 373-378.

2. ANTUNES, P.J., DIAS, G.R., COELHO, A.T., REBELO, F., & PEREIRA, T. 2008. **Nonlinear 3D foot FEA modeling from CT scan medical images**

. Pages 135-141 of: Tavares, João, & Natal, Jorge (eds), Computational Vision and Medical Image Processing. Taylor & Francis.

3. CUNHA, M. M.; PUTNIK, G. D.; SIMOES, R.; Market of Resources for Health Care Teleservices Management In **Encyclopedia of Networked and Virtual Organizations**; G.D. Putnik, M.M.Cunha (Eds.), Idea Group Reference, 2008, p. 913. ISBN 978-1-59904-885-7.

4. FERREIRA, J.; FONSECA, C.; COVAS, J.A.; GASPAR-CUNHA, A. - Evolutionary Multi-Objective Robust Optimization. In **Advances in Evolutionary Algorithms**, in Witold Kosiński (Ed), I-Tech Education and Publishing, Vienna, Austria, 2008, p. 261-278
, ISBN 978-3-902613-32-5.

5. LARONTONDA, F. D. S.; HILLIOU, L.; GONCALVES, M. P.; SERENO, A. M. – From Low Value renewable Resources to green Biomaterials for Edible Coating Applications. In **Recent Advances In Research on Biodegradable Polymers and Sustainable Composites (vol. 3)** ; A. Jiménez, G. E. Zaikoz (Eds.), 2008, p. 19. ISBN 978-1-60692-155-5, in print.

6. PONTES, A.J., et al. –D3 - **Casos de estudo**. Em o Manual de Microfabricação. Centimfe: Marinha Grande. 2008. 8 Fasciculus, ISBN: 978-989-95964-3-6

7. SIMOES, R.; Virtual modelling and rapid prototyping as an aid in collaborative product design and development; In **Encyclopedia of Networked and Virtual Organizations**; G.D. Putnik, M.M.Cunha (Eds.), Idea Group Reference, 2008, p. 1812. ISBN 978-1-59904-885-7

International Publications in Peer-reviewed Journals

1. AFONSO, I. M.; CRUZ, P.; MAIA, J. M.; MELO, L.F. - Simplified numerical simulation to obtain heat transfer correlations for highly viscous non-Newtonian fluids in plate heat exchangers. **Food Bioprod. Process.** Vol. 86 (2008). pp. 296-303

2. Alves, P.S.; Pontes, A.J. – The effect of thermomechanical environment on the shrinkage and warpage in thermoplastic parts. **Materials Science Forum**, vols. 587-588 (2008), p. 558-562.

3. ANTUNES, P.J., DIAS, G.R. COELHO, A.T., REBELO, F., & PEREIRA, T. Hyperelastic Modelling of Cork-Polyurethane Gel Composites: Non-linear FEA Implementation in 3D Foot Model. **Materials Science Forum**, Vols. 587-588 (2008), p.700-705.

4. ANTUNES, P.J., DIAS, G.R., NUNES, J.P., VAN HATTUM, F.W.J., and OLIVEIRA, T. – Finite Element Modelling of Thermoplastics Matrix Composite Gas Cylinders **Journal of Thermoplastic Composite Materials**, Vol. 21, nº 5 (2008), p. 411-441.

5. ARAÚJO, M. A.; CUNHA, A. M.; MOTA, M. – Enzymatic degradation of starch thermoplastic blends using samples of different thickness. **Journal of Materials Science: Materials in Medicine** . Electronic publication.

6. BARROSO, E. G.; DUARTE, F. M.; COUTO, M.; MAIA, J. M. – A Rheological Study of the Ageing of Emulsion and Microsuspension-Based PVC Plasticsols **J. Appl. Polym. Sci.**, Vol. 109 (2008), p.664-673.

7. BILEWICZ, M.; VIANA, J. C.; DOBRZAŃSKI, L. A. - Polymer composite strengthening by developed injection moulding technique. **Archives of Materials Science and Engineering**, Vol . 30 (2008) p 69-72.

8. CAMPOS, A. R.; CUNHA, A. M.; TIELAS, A.; MATEOS, A. – Biodegradable composites applied to the automotive industry: the development of a loudspeaker front. **Materials Science Forum**. Vols.

587-588,
(2008), p. 187-191

9. CARNEIRO, O. S.; REIS, R.; COVAS, J. A. – Small-Scale Production of Co-Extruded Biaxially Oriented Blown Film. **Polymer Testing** Vol. 27 (2008), p. 527-537.

10. CHAPPÉ, J.M.; CARVALHO, P.; LANCEROS-MENDEZ, S.; VASILEVSKIY, M.I.; VAZ, F.; MACHADO, A.V.; FENKER, M.; KAPPL, H.; PARREIRA, N.M.G.; CAVALEIRO, A.; ALVES, E. - Influence of air oxidation on the properties of decorative NbOxNy coatings prepared by reactive gas pulsing, **Surf. Coat. Technol.** Vol. 202 (2008) p. 2363–2367.

11. CHAPPÉ, J.M.; CARVALHO, P.; MACHADO, A.V.; VAZ, F.; ALVES, E.; BARRADAS, N.P.; FENKER, M.; KAPPL, H. - Structural study of the oxidation process and stability of NbOxNy coatings, **Nucl. Instr. and Meth. in Phys. Res. B.** Vol. 266 (2008) p. 4927–4932.

12. COVAS, J.A.; MAIA, J.M.; MACHADO, A.V.; COSTA, P. - On-line rotational rheometry for extrusion and compounding operations, **J. Non-Newtonian Fluid Mech.** Vol. 148 (2008), p. 88–96.

13. CUNHA, S. M.; GASPAR CUNHA, A.; COVAS, J. A - Melting of PP/PA6 Polymer Blends in Single Screw Extruders – An Experimental Study. **Materials Science Forum**, Vols. 587-588 (2008) p 505-509.

14. Denchev, Z – Polyolefin blends, **Macromolecular Materials and Engineering**, Vol. 293 (2008), p. 641.

15. Denchev, Z; Dencheva, N. - Transforming Polymer Blends into Composites: a pathway towards nanostructured materials, **Polymer International**, Vol. 57, n° 7

1 (2008)

, p.

11-22.

16. Denchev, Z; Tomanova, M; Lederer, A. - On the anionic homo- and co-polymerization of ethyl- and butyl-2-cyanoacrylates, **Journal of**

Polymer Science Part A – Polymer Chemistry

,
Vol.

46

, n^o

15 (2008),

p.

5142-5156

17. DENCHEVA, N.; OLIVEIRA, J.; CARNEIRO, O.; NUNES, T.; DENCHEV, Z. – Preparation and Properties of Novel In Situ Composite Materials Based on Polyethylene-Polyamide Oriented Blends. **Materials Science Forum**, Vols. 587-588 (2008), p. 515-519.

18. Dencheva, N; Denchev, Z; Oliveira, MJ; Nunes, T; Funari, SS - Relationship between the crystalline structure and mechanical behavior in isotropic and oriented polyamide 12,

Journal of Applied Polymer Science

, Vol.

109,

n^o

1

(

2008)

, p.

288-302.

19. DUARTE, F. M.; COVAS, J. A. – A multilayer plug concept to enhance thickness distribution control of deep thermoformed parts, **Plastics, Rubber and Composites: Macromolecular**

Engineering, Vol. 37, n^o 7 (2008), p. 293-300.

20. FANGUEIRO, R., NUNES, J.P., SOUTINHO, F., ARAÚJO, M. - Development of fibrous preforms for frp tube connections, **Composites Science and technology**.
21. FARIA, R. P.; CARNEIRO, O. S.; NÓBREGA, J. M.; RITTO, M. K. – Design and Optimisation of a Blow Moulded Container. **Materials Science Forum**, Vols. 587-588 (2008), p. 510-514.
22. FERNANDES, C. S.; DIAS, R.; NÓBREGA, J. M.; MAIA, J. M. - **Friction** factors of power-law fluids in chevron-type plate heat exchangers. **J. Food Eng.**, Vol. 89 (2008), p. 441-447.
23. FREITAS, F.; ALVES, V. D.; PAIS, N.; COSTA, C.; MAFRA, L.; HILLIOU, L.; OLIVEIRA, R.; REIS, M. A. M. – Characterization of an exopolysaccharide produced by a *Pseudomonas* strain grown on glycerol. **Bioresource Technology** Vol. 100, nº 2 (2009), p. 859-865.
24. GASPAR, J.; BÁRTOLO, P.; DUARTE, F. M. – Cure and rheological analysis of reinforced resins for stereolithography, **Materials Science Forum**, Vol. 587-588, (2008), p. 563-567.
25. GASPAR-CUNHA, J.A. COVAS - Robustness in Multi-Objective Optimization using Evolutionary Algorithms. **Computational Optimization and Applications**, Vol. 39 (2008), 75-96.
26. GHOSH, S.; GUTIERREZ, V.; FERNANDEZ, C.; RODRIGUEZ-PEREZ, M. A.; VIANA, J. C.; REIS, R. L.; MANO, J. F. – Dynamic mechanical behavior of starch-based scaffolds in dry and physiologically simulated conditions: effect of porosity and pore size. **Acta Biomaterialia**, Vol. 4, (2008), p. 950-959.
27. GHOSH, S.; VIANA, J. C.; REIS, R. L.; MANO, J. F. - Bi-layered constructs based on poly(L-lactic acid) and starch for tissue engineering of osteochondral defects. **Materials**

Science & Engineering C - Biomimetic and Supramolecular Systems

, Vol. 28 (2008) p. 80-86.

28. GHOSH, S.; VIANA, J. C.; REIS, R. L.; MANO, J. F. – Development of porous lamellar poly(L-lactic acid) scaffolds by conventional injection molding process. **Acta Biomaterialia**, Vol. 4 (2008), p. 887-896.

29. GHOSH, S.; VIANA, J. C.; REIS, R. L.; MANO, J. F. – Oriented morphology and enhanced mechanical properties of poly(L-lactic acid) from shear controlled orientation in injection molding. **Materials Science and Engineering A**, Vol. 490 (2008) p. 81-89.

30. HANCIC, A.; KUZMAN, K.; KOSEL F.; ANDREJ, G.; CUNHA, A. M.; GANTAR, G. – Mechanical and processing characterization of effective behavior of wood-plastic composites by analytical and numerical simulation. **Materials Science Forum**. Vols. 575-578, (2008), p. 959-971

31. HILLIOU, L.; VLASSOPOULOS, D.; PISPAS, S.; HADJICHRISTIDIS, N. – A rheo-optical study of stress-fluctuations coupling in a disordered and entangled diblock copolymer solution. **Macromolecules**. Vol. 41, n° 9 (2008), p. 3328-3338.

32. JIMÉNEZ, L.; ROCHA, A. M.; ARANBERRI, I.; COVAS, J. A.; CATARINO, A. P. - *Electrically Conductive Monofilaments for Smart Textiles*.

□
Adv. Sci. Techn

,
Vol. 60

,
(2008) p. 58-63.

33. KROL, M.; BILEWICZ, M. ; VIANA J.C.; DOBRZAŃSKI, L.A. - The Thermomechanical Processing Conditions and the Mechanical Properties of Injection Molded PP/PC Blends. **Materials Science Forum**, Vols. 587-588 (2008) pp 553-557.

34. LEER, C.; VAN HATTUM, F. W. J.; CARNEIRO, O. S.; LANCEROS-MENDEZ, S. – On the Dispersion of Carbon Nanofibres-Based Suspensions in Simple Shear: an Experimental Study.

Materials Science Forum

, Vols. 587-588 (2008), p. 192-196.

35. MACHADO, A.V.; BOUNOR-LEGARE, V.; MELIS, F.; CASSAGNAU P.; MICHEL, A. - Continuous polymerization of α -Caprolactone initiated by titanium phenoxide in a twin screw extruder, **Journal of Applied Polymer Science**, Vol. 110 (2008) p. 3480–3487.

36. MAGEE, C. L.; RINGO, J. D.; CUNHA, A. M. – Engineering design and product development: a focus of the MIT-Portugal programme. **The international Journal of Engineering Education**.

Vol. 24, nº 2,

(2008), p. 336-344.

37. MOURA, I.; MACHADO, A. V.; DUARTE, F.M.; BOTELHO, G.; NOGUEIRA, R. -Preparation of Biodegradable materials by reactive extrusion,

Materials Science Forum IV.

Vols. 587-588 (2008) p. 520-524.

38. NÓBREGA, J. M.; CARNEIRO; O. S.; GASPAR-CUNHA, A.; GONÇALVES, N. D. – Design of Calibrators for Extruded Profiles: Optimizing Multi-Step Systems. **Intern. Polym. Proc.** Vol. XXIII (2008), p. 331-338.

39. OLIVEIRA, M. J., BOTELHO, G.– Degradation of polyamide 11 in rotational moulding. **Polymer Degradation and Stability**.

Vol. 93 (2008), p139-146.

40. OLIVEIRA, M. J., CRAMEZ, M. C., GARCIA, C. B., KEARNS, M. P., MAZIERS, E. – Effect of processing conditions on the microstructure and properties of polyamide 11. **Journal of Applied Polymer Science**.

Vol. 108 (2008), p. 939-946.

41. PAIVA, M. C.; EL GAIED A.; BEN CHEIKH, R.; CUNHA A. M. - Interfaces in Alfa Fibre-Polypropylene Matrix Composites. **Materials Science Forum**. Vols. 587-588 (2008) p. 227-231.
42. RIBEIRO, C.J., VIANA, J.C.; VILAÇA, F.; AZENHA, J. - Development of Automotive Plastic Pillars for Preventing Occupant Injuries by Finite Element Simulations: The Role of Material Properties. **Materials Science Forum**, Vols. 587-588 (2008) pp 956-960.
43. RODRIGUES, A.L.; BRITO, A. G.; JANKNECHT, P.; SILVA, J.; MACHADO A. V.; NOGUEIRA, R.- Characterization of biofilm formation on a humic material, **J Ind Microbiol Biotechnol**. Vol. 35 (2008) p. 1269–1276.
44. SABINO NETTO, A.C.; SALMORIA, G.V.; AHRENS, C.H.; POUZADA, A.S. - Mechanical properties of epoxy composites filled with short steel fibres for hybrid injection moulds, **Advanced Materials Forum**, vol. 587-588 (2008) pp 217-221.
45. SABINO NETTO, A.C.; SALMORIA, G.V.; AHRENS, C.H.; POUZADA, A.S. – Fritction Properties of Steel Fibre Reinforced Epoxy Composites used in Moulding Blocks of Hybrid Moulds, **Materials Science Forum**, vol. 587-588 (2008) pp 217-221.
46. SILVA C.A., VIANA J.C., VAN HATTUM F.W.J., CUNHA A.M. - Fiber orientation in injection molding with rotating flow, **Polym. Eng. Sci.**, Vol. 48 (2), (2008) p 395-404.
47. SILVA, J. F., NUNES, J. P., VIEIRA, P., MARQUES, A. T. – GF/PP towpregs production, testing and processing, **International Journal of Mechanics and Materials in Design**, Vol 4, nº 2 (2008) p. 205–211.

48. SILVA, M. P.; SENCADAS, V.; ROLO, A.G.; BOTELHO, G.; MACHADO, A. V.; ROCHA, J. G.; LANCEROS-MÉNDEZ, S. - Influence of the crystallization kinetics on the microstructural properties of g-PVDF, **Materials Science Forum** Vols. 587-588 (2008) 534-537.
49. SILVA, R. F.; SILVA, J. F.; NUNES, J. P.; BERNARDO, C. A.; MARQUES A. T - New powder coating equipment to produce continuous fibre thermoplastic matrix towpregs. **Materials Science Forum**, Vol. 587-588 (2008) p. 246-250.
50. SOUSA, A.; MARTINS, S.; LAROTONDA, F. D. S.; HILLIOU, L.; GONÇALVES, M. P.; SERENO, A. M. – Biodegradable polymers extracted from “Sargaço”: film properties and application to edible coating. **Materials Science Forum**. Vol. 587-588 (2008) p. 548-552.
51. TODOROV, L. V.; FREIRE, O.M.; VIANA, J.C. – Uniaxial Stretching Above the Glass Transition Temperature of Poly(ethylene terephthalate) and its Effects on the Structure Development. **Materials Science Forum**, Vols. 587-588 (2008) p 529-533.
52. TODOROV, L.V., J.C. VIANA - Structure evolution of PET under step-wise and continuous deformation modes: the effect of stress relaxation on the strain-induced morphology, **Int J Materials Forming**, 2008, (DOI 10.1007/s12289-008-0) ESAFORM 2008.
53. TORRES, L., NUNES, J. P., SILVA, J. F., MARQUES A. T. - New PVC matrix towpregs and composites, **Materials Science Forum** Vol. 587-588 (2008) p. 241-245.
54. VELOSA, J. C., NUNES, J. P., ANTUNES, P. J., SILVA, J. F. MARQUES, A. T. - Development of a New Generation of Filament Wound Composite Pressure Cylinders. Composites Science and technology. <http://dx.doi.org/10.1016/j.compscitech.2008.09.018>

(2008).

55. VILA, C.; CAMPOS, A. R.; CRISTOVÃO, C.; CUNHA, A. M.; SANTOS, V.; PARAJÓ, J. C. - Sustainable biocomposites based on autohydrolysis of lignocellulosic substrates. **Composites Science and Technology**. Vol. 68, (2008), p. 944-952.

56. WANG, J.; SILVA, C. A.; VIANA, J. C.; VAN HATTUM, F.; CUNHA, A. M.; TUCKER III, C. L. – Prediction of fiber orientation in a rotating compressing and expanding mold. **Polymer Engineering and Science**. Vol. 48, nº 7, (2008), p. 1405-1413.

57. YANEV, A. S.; DIAS, G. R.; CUNHA, A. M. – Visualization of Injection Moulding Process. **Materials Science Forum**. Vols. 587-588, (2008), p. 716-720

National Publications in Peer-reviewed Journals

1. BARETA, D.R.; COSTA, C.A.; ZATTERA, A.J.; POUZADA, A.S. – Influência de materiais alternativos nas propriedades de peças tubulares no contexto de moldes protótipo de injeção, **Tecnologia em Metalurgia e Materiais**, vol. 4:3, (2008) p.37-42.

2. GOMES, M., VIANA, J.C., Pontes, A.J. – Injection moulding of incompatible polymers. **Olde** (edição bilingue português-inglês), nº 79 (2008), p.22-27.

3. J SILVA, J. F.; NUNES, J. P.; MARQUES A. T.; BERNARDO, C. A.; VIEIRA, P.; VASCONCELOS, M. - Novos termoplásticos reforçados com fibras longas.

Engenharia Química- Indústria, Ciência e Tecnologia

, vol. 9 (2008) p 11-13.

4. TORRES, L., SILVA, J. F., NUNES, J. P., MARQUES A. T., MARQUES, R. P., Compósitos com matriz de policloreto de vinilo, **Engenharia Química - Indústria, Ciência e Tecnologia**, vol. 9 (2008), p.14-17.

Patents

1. JORGE, H. R.; CUNHA, A. M. – Ligantes Poliméricos à Base de um Polímero Solúvel em Água e um Polímero de Estrutura para Utilização em Moldação por Injecção de Pós Metálicos ou Cerâmicos e Processo para a sua Produção, Application nº 20081000098750, November 2008.

2. PONTES, A.J. MINAS, G., CUNHA, J., CORTEZ, J. – Micromisturador polimérico descartável e sua aplicação em microsistemas laboratoriais, Patente Nacional nº 37623, 2007.

PhD Theses

1. CABRAL-FONSECA, S., **Durabilidade de Materiais compósitos de Matriz Polimérica Reforçados com Fibras usados na Reabilitação de Estruturas**

de Betão

, Universidade do Minho, Guimarães.

2. DENCHEVA, N. V. – **Development and Investigation of Novel in situ Reinforced Nanocomposites Based on Polymer Blends**, Universidade do Minho, Guimarães.

3. GHOSH, S., **Influence of the Microstructure on the Properties and Degradation Behaviour of Bio-Absorbable Synthetic and Natural-based Biomaterials**, Universidade do Minho, Braga.

4. SABINO NETTO, A.C. - **Desenvolvimento e Avaliação de Compósito de Resina Epóxi Reforçado com Fibras de Aço na Fabricação de Blocos Moldantes para Moldagem por Injeção**, Universidade Federal de Santa Catarina, Florianópolis, Brasil

5. YANEV, A. S. - **Direct Visualization and on-line Monitoring in Injection Moulding**, Universidade do Minho, Guimarães

MSc Theses

1. ALVES, P.S.F.F. - **Shrinkage and Warpage Behaviour on Injection Moulding Parts**, Universidade do Minho, Guimarães.

2. SILVA, M. F A. - **Moldes Protótipos para a Produção de Peças em RIM**, Universidade do Minho, Guimarães, 2008. Tese de Mestrado.

3. SIMÔES, C. L. - **Aplicação da Metodologia ACV a um Dispositivo de Sinalização Rodoviária**, Universidade do Minho, Guimarães.