

## 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.

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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°

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

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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,

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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.
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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**

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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.