

Author: Assoc. prof. eng. Motoc Luca Dana, PhD

Title: Tailoring the effective properties of hybrid polymer based composite materials

Domain: Mechanical Engineering

PUBLICATIONS LIST

RELEVANT PAPERS

1. Oltean, D.I., et al., *Electrical properties of metallic iron particle reinforced polymeric composite materials*. Journal of Optoelectronics and Advanced Materials, 2008. **10**(12): p. 3328-3331.
2. Curtu, I. and Motoc Luca D., *Theoretical - experimental comparisons of multi-phase composite materials elastic coefficients retrieved from tensile, compressive and bending tests. Influencing factors*. Materiale Plastice, 2008. **45**(4): p. 366-371.
3. Motoc Luca D. and I. Curtu, *Dynamic mechanical analysis of multiphase polymeric composite materials*. Materiale Plastice, 2009. **46**(4): p. 462-466.
4. Motoc Luca D., et al., *Multiphase polymeric composite materials CTE variation with extreme environmental conditions*. Materiale Plastice, 2010. **47**(2): p. 236-239.
5. Motoc Luca D., I. Oltean, and V. Luca, *Tailoring the multiphase composite materials' electrical properties*. Journal of Optoelectronics and Advanced Materials, 2010. **12**(8): p. 1795-1798.
6. Ferrandiz Bou, S., Pop, A. P., Lopez Martinez, J., Motoc Luca, D.- *Adapting to the new ECTS programme. Comparison of the evolution of the materials course in Romania and Spain*. INTEND 2011: 5th International Technology, Education and Development Conference, 2011: p. 4027-4033.
7. Motoc Luca D., *Dynamic mechanical characterization of CF/GF hybrid reinforced polymeric composite structures*. Proceedings of the ASME 11th Biennial Conference on Engineering Systems Design and Analysis ESDA, 2012, Vol 3. p. 27-32.
8. Motoc Luca D. and S. Vlase, *Micromechanical based simulation and experimental approaches in the thermal conductivities assessment of hybrid polymeric composite materials*. Proceedings of the ASME 11th Biennial Conference on Engineering Systems Design and Analysis, 2012, **3**: p.21-26
9. Motoc Luca D., J. Ivens, and N. Dadirlat, *Coefficient of thermal expansion evolution for cryogenic preconditioned hybrid carbon fiber/glass fiber-reinforced polymeric composite materials*. Journal of Thermal Analysis and Calorimetry, 2013. **112**(3): p. 1245-1251.
10. Motoc Luca D., S. Ferrandiz Bou, and R. Balart Gimeno, *Effects of fibre orientation and content on the mechanical, dynamic mechanical and thermal expansion properties of multi-layered glass/carbon fibre-reinforced polymer composites*. Journal of Composite Materials, 2014. **49**(10): p. 1211-1221.

PhD THESIS

Contributions to the analyzing the correlations between the tension level and the physical properties characteristic of certain materials by using non-destructive testing methods (sound, visual)

PATENTS

Adjusting resistor made of a piezo-resistive based effect composite material, Patent no. RO 123411, issued on 28/02/2012.

BOOKS / BOOK CHAPTERS

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2. D. Luca Motoc – *Materiale compozite cu pulberi: analiză, modelare, fabricare și testare ultrasonică nedistructivă*, Ed. Universității Transilvania din Brașov, ISBN 973-635-527-6, 2005.
3. I. Szava, V. Ciofoaia, D. Luca Motoc, I.Curtu - *Metode experimentale în dinamica structurilor mecanice*, Ed. Universității Transilvania din Brașov, ISBN 973-9474-40-3, 2000.
4. D. Luca Motoc – *Echipamente de prelucrare optică a informațiilor*, Ed. Universității Transilvania din Brașov, ISBN , 2003.
5. D. Luca Motoc, Gh. Bejinaru, A. Pop, M. Novac – *Materiale și semifabricate optice. Sticla optică*, Ed. Universității Transilvania din Brașov, ISBN 978-635-515-2, 2005.
6. D. Luca Motoc – *Programarea în C++. Aplicații*, Ed. Universității Transilvania din Brașov, ISBN 978-973-598-183-9, 2007.
7. S. Zamfira, D. Luca (Motoc), M. Baritz, A. Cornea, M. Ulea – *Îndrumar de optică tehnică*, Ed. Universității Transilvania din Brașov, 1998.
8. Motoc Luca D., Oltean I. D. - *Conductive polymeric composite material's behaviour under various loading conditions*, DAAAM International Scientific Book 2008, ISBN 3-901509-69-0, ISSN 1726-9687, Ed. B. Katalinic, Publisher DAAAM International Viena.
9. Șoica A., Motoc Luca D., Lache S., Țârulescu S. - *Aspects concerning of the automotive-pedestrian collision*, DAAAM International Scientific Book 2008, ISBN 3-901509-69-0, ISSN 1726-9687, Ed. B. Katalinic, Publisher DAAAM International Viena.
10. Curtu I., Motoc Luca D. – *Theoretical and experimental approach of multi-phase composite materials*, DAAAM International Scientific Book 2009, ISBN 978-3-901509-71-1, ISSN 1726-9687, Ed. B. Katalinic, Publisher DAAAM International Viena.
11. Motoc Luca D., Ciofoaia V. – *Predicting, measuring and tailoring thermal properties of morphological and structural modified polymeric composite materials*, Engineering the future, Ed. L. Dudas, ISBN 978-953-307-210-4, Sciyo, 2010.

JOURNAL ARTICLES

1. Oltean, D.I., et al., *Electrical properties of metallic iron particle reinforced polymeric composite materials*. Journal of Optoelectronics and Advanced Materials, 2008. **10**(12): p. 3328-3331.
2. Curtu, I. and Motoc Luca D., *Theoretical - experimental comparisons of multi-phase composite materials elastic coefficients retrieved from tensile, compressive and bending tests. Influencing factors*. Materiale Plastice, 2008. **45**(4): p. 366-371.
3. Motoc Luca D. and I. Curtu, *Dynamic mechanical analysis of multiphase polymeric composite materials*. Materiale Plastice, 2009. **46**(4): p. 462-466.

4. Motoc Luca D., et al., *Multiphase polymeric composite materials CTE variation with extreme environmental conditions*. Materiale Plastice, 2010. **47**(2): p. 236-239.
5. Motoc Luca D., I. Oltean, and V. Luca, *Tailoring the multiphase composite materials' electrical properties*. Journal of Optoelectronics and Advanced Materials, 2010. **12**(8): p. 1795-1798.
6. Motoc Luca D. and N. Dadirlat, *Particle size and structural composition influences on overall CTE behavior of recycled polymeric*. Metalurgia International, 2011. **16**(4): p. 149-152.
7. Motoc Luca D., A.P. Pop, and G.B. Mihoc, *A perspective in sizing the main influencing factors on the thermal properties of different metal/non-metal powders*. Metalurgia International, 2011. **16**(4): p. 97-100.
8. Novac, G., M.D. Luca, and M.G. Bejinaru, *Tailoring thermal regimes to size the overall CTE of SiC particle reinforced polymeric composites*. Metalurgia International, 2011. **16**(3): p. 19-21.
9. Motoc Luca D., G. Novac, and R.M. Popescu, *Measuring and characterizing CTE variations for multiphase polymeric composites subjected to extreme environmental conditions*. Metalurgia International, 2011. **16**(3): p. 22-25.
10. Vlase, S., Teodorescu-Draghicescu, H., Motoc Luca, D., Scutaru, M. L., Serbina, L., Calin, M. R., *Behavior of multiphase fiber-reinforced polymers under short time cyclic loading*. Optoelectronics and Advanced Materials-Rapid Communications, 2011. **5**(3-4): p. 419-423.
11. Purcarea, R., Motoc Luca D., and M.L. Scutaru, *Mechanical behavior of a thin nonwoven polyester mat subjected to three-point bend tests*. Optoelectronics and Advanced Materials-Rapid Communications, 2012. **6**(1-2): p. 214-217.
12. Motoc Luca D., et al., *A comparison approach on predicted and retrieved mechanical properties of Ni foams*. Metalurgia International, 2013. **18**: p. 69-72.
13. Motoc Luca D., J. Ivens, and N. Dadirlat, *Coefficient of thermal expansion evolution for cryogenic preconditioned hybrid carbon fiber/glass fiber-reinforced polymeric composite materials*. Journal of Thermal Analysis and Calorimetry, 2013. **112**(3): p. 1245-1251.
14. Pop, M.A., et al., *CTE assessment of various glass fibre reinforced polymer composite architectures*. Metalurgia International, 2013. **18**: p. 131-134.
15. Motoc Luca D., S. Ferrandiz Bou, and R. Balart Gimeno, *Effects of fibre orientation and content on the mechanical, dynamic mechanical and thermal expansion properties of multi-layered glass/carbon fibre-reinforced polymer composites*. Journal of Composite Materials, 2014. **49**(10): p. 1211-1221.
16. Motoc Luca, D., *Hybrid particle/fiber polymer based composites analysis based on DMA data vs. material property predictions*. Applied Mechanics and Materials 2014: p. 101-106.
17. Motoc Luca D., Bedo, T., *An estimate of thermo-physical changes in hybrid basalt/glass fibres reinforced polymer composites*, Advanced Engineering Forum, **13**, 2015: p. 23-28.

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Including ISI Proceedings and data base indexed (i.e. Scopus, Google Scholar)

1. Motoc Luca, D. and A. Soica. *Mechanical behaviour of 3-phase polymeric composites subjected to static loading conditions*. in *Proceedings of the International Conference of DAAAM Baltic "Industrial Engineering"*. 2008.
2. Teodorescu-Draghicescu, H., et al., *On the elastic properties of some advanced composite laminates subjected to off-axis loading systems*. Proceedings of the 1st

- WSEAS International Conference on Materials Science, ed. D.K. Yfantis, et al. 2008. 40-43.
3. Teodorescu-Draghicescu, H., et al., *Some advanced symmetric composite laminates subjected to off-axis loading systems. A stiffness evaluation*, in Proceedings of the 13th International Conference Modern Technologies, Quality and Innovation: Modtech 2009 - New Face of TMCR, D. Nedelcu, L. Slatineanu, and S. Mazuru, Editors. 2009. p. 647-650.
 4. Luca, V., Motoc Luca, D., Olteanu, I. D. *Multiphase composite materials elastic modulus non-destructive assesment* in *Proceedings of the 2nd WSEAS International Conference on Engineering mechanics, Structures and Engineering geology*. 2009. Rhodos.
 5. Motoc Luca, D. *Effects of particle content and post-curing thermal treatment on the effective modulus of multi-phase composite materials*. in *Annals of DAAAM and Proceedings of the International DAAAM Symposium*. 2009.
 6. Motoc Luca, D., *A micromechanical based bounding and elastic properties estimation of multiphase polymeric composite materials*, in *The 3rd International Conference on Computational Mechanics and Virtual Engineering COMEC 2009*. 2009: Brasov. p. 399-402.
 7. Cerbu C., Motoc Luca D., Ciofoaia V. - *Advantages of the using of the poliester resin to manufacturing of the composite materials based on wood flour*, Proceedings to the 20th International DAAAM Symposium "Intelligent Manufacturing & Automation: Theory, Practice & Education", 25-28 noiembrie 2009, Viena, Austria, ISSN 1726-9679, ISBN 978-3-901509-70-4, p. 1417-1418.
 8. Motoc Luca, D., C. Cerbu, and A. Soica. *Static versus dynamic elastic moduli of multiphase polymeric composite materials*. in *Annals of DAAAM and Proceedings of the International DAAAM Symposium*. 2009
 9. Motoc Luca, D., I. Oltean, and V. Luca, *Tailoring the mltiphase materials' electrical properties* in *The 6th International Romanian Conference on Advanced Materials:ROCAM 2009*. 2009, Ed. Universitatii din Bucuresti: Brasov.
 10. Motoc Luca D., Pop A. P., Bejinaru Gh. - *Sizing the cryogenic conditioning on the CTE and Young modulus in case of polymeric multiphase composites*, MSEC 2010 – International Manufacturing Science and Engineering Conference, ASME 2010, Oct. 12-15, Erie, USA, ISBN 978-0-7918-3887-7.
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 12. Motoc Luca D., N. Dadirlat, and H. Teodorescu, *Novel multiphase polymeric composite structures with improved CTE designed for heating elements*. New Aspects of Fluid Mechanics, Heat Transfer and Environment, ed. N. Mastorakis, V. Mladenov, and Z. Bojkovic. 2010. 358-360.
 13. Motoc Luca, D., Curtu, I, Campean, M *Environmental effects on multiphase polymeric composite materials' thermal properties*. in *14th European Conference on Composite Materials ECCM14*. 2010. Budapest: Budapest University of Technology and Economics, Department of Polymer Engineering.
 14. Motoc Luca, D., Pop, I. O., Luca, M., *Size and morphology related dependencies in CTE of multiphase particle reinforced polymeric composite materials*, in *ICRACM 2010, 3rd International Conference on Recent Advances in Composite Materials, December 13-15, 2010* F.C. A. Pizzi, F. Hugot et al., Editor. 2010: Universite de Limoges, Limoges, France.

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18. Motoc Luca, D. and D.I. Oltean, *Aspects concerning the electrical behaviour of metallic particle reinforced polymeric composite materials*, in *DAAAM International Scientific Book*, B. Katalinic, Editor. 2008, DAAAM International: Viena, Austria.
19. Motoc Luca, D. and A. Soica. *Sizing the microstructural influence on the cte's variation in case of particle reinforced polymeric composites*. in *Proceedings of the International Conference of DAAAM Baltic "Industrial Engineering"*. 2010.
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21. Oltean, D.I., D. Motoc Luca, and V. Luca. *Effective electrical conductivity estimation for a novel multi-phase composite material*. in *Advances in Microelectronics, Nanoelectronics & Optoelectronics MINO'09*. 2009. Istanbul, Turkey.
22. Oltean, I.D. and D.L. Motoc, *Experimental research approaches of few electrical properties in case of metallic particles reinforced polymeric composite materials*. Proceedings of the 10th International Conference on Optimization of Electrical and Electronic Equipment, Vol I: Electrotechnics, ed. M. Cernat, A. Nicolaide, and I. Margineanu. 2006. 165-168.
23. Olteanu, I.D. and D. Motoc Luca. *Conductive polymeric composites behaviour under various loading conditions*. in Proceedings of the International Conference of DAAAM Baltic "Industrial Engineering". 2008.
24. Pirna, I., et al., *Flexural rigidity evaluation of a new sandwich structure with nonwoven polyester mat*. Proceedings of the 11th Wseas International Conference on Automatic Control, Modelling and Simulation, ed. M. Demiralp, N.A. Baykara, and N.E. Mastorakis. 2009. 234-239.
25. Teodorescu, H., et al., *Some averaging methods in the micromechanics of composite materials with periodic structure*. ACMOS '08: Proceedings of the 10th Wseas International Conference on Automatic Control, Modelling and Simulation, ed. M. Demiralp, et al. 2008. 210-214.
26. Teodorescu, H., et al., *Mechanical behavior of an advanced sandwich composite structure*. New Aspects of Engineering Mechanics, Structures, Engineering Geology, ed. M.K. Nikolinakou, et al. 2008. 280-285.
27. Teodorescu-Draghicescu, H., et al., *On the elastic constants of a fibre-reinforced composite laminate*. Proceedings of the 2nd WSEAS International Conference on Engineering Mechanics, Structures and Engineering Geology, ed. N.E. Mastorakis, O. Martin, and X.J. Zheng. 2009. 155-158.
28. Teodorescu-Draghicescu, H., et al., *A homogenization method for pre-impregnated composite materials*. World Congress on Engineering 2009, Vols I and II, ed. S.I. Ao, et al. 2009. 1563-1568.

29. Teodorescu-Draghicescu, H., et al., *Thermal behaviour of a thin sandwich composite structure with nonwoven polyester mat core*. New Aspects of Fluid Mechanics, Heat Transfer and Environment, ed. N. Mastorakis, V. Mladenov, and Z. Bojkovic. 2010. 345-350.
30. Ferrandiz Bou, S., Pop, A. P., Lopez Martinez, J., Motoc Luca, D.- *Adapting to the new ECTS programme. Comparison of the evolution of the materials course in Romania and Spain*. INTEND 2011: 5th International Technology, Education and Development Conference, 2011: p. 4027-4033.
31. Motoc Luca D. – *FEM based simulation of injected bone shaped PP based composite materials*, The 4th International Conference on Advanced Composite Materials Engineering, COMAT 2012, 18th-20th October 2012, Braşov, vol. 3, p. 764-768, ISBN 978-973-131-162-3.
32. Oltean, I.D. and D.L. Motoc, *About electromagnetic behaviour of composite materials with iron powder*. 2013 8th International Symposium on Advanced Topics in Electrical Engineering. 2013.

OTHER PAPERS / RELEVANT ACHIEVEMENTS

Presentations delivered at Romanian Academy, with Thermal Analysis and Calorimetry commission

1. *Dynamic mechanical properties of basalt/flax and carbon/flax hybrid polymer composites* (2015)
2. *Towards "all green" hybrid polymer composites tailored by the aid of DMA investigations* (2014).

Invited lecture

Place: 30 Sept. 2013 - PYCO Fraunhofer Research Institution for Polymeric Materials and Composites and Brandenburg Technical University at Cottbus

Title of delivered lecture: *Polymer reinforced composites: an engineering perspective*

Date

1st July 2015

Assoc. prof. eng. Motoc Luca Dana, PhD