

## **PUBLICATIONS**

### **Peer-reviewed articles**

1. A. Tabaković, L. Schuyffel, A. Karač, E. Schlangen, Healing Efficiency of Compartmented Alginate Fibres Encapsulating Rejuvenator as Asphalt Pavement Healing System, *Applied Sciences*, 7 (7), 647, 2017.
2. Lj. Budinski-Petković, I. Lončarević, D. Dujak, A. Karač, J.R. Šćepanović, Z.M. Jakšić, S. B. Vrhovac, *Particle morphology effects in random sequential adsorption*, *Physical Review E*, 95, 022114, 2017.
3. D. Mc Auliffe, A. Karac, N. Murphy, A. Ivankovic, *The measurement of damage initiation, particle adhesion and cohesive strength from traction displacement curves of a nano-toughened epoxy*, *International Journal of Adhesion and Adhesives*, 30: 62-73, 2016.
4. D. Dujak, I. Lončarević, Lj. Budinski-Petković, S. B. Vrhovac, A. Karač, *Adsorption-desorption processes of polydisperse mixtures on a triangular lattice*, *Physical Review E*, 91, 032414, 2015.
5. Kačmarčík J., Konjatić P., Karač A., *Investigation of the mixed-mode fracture in delamination tests: Numerical simulations using Cohesive Zone and partitioning methods*, *Tehnički vjesnik*, 22(3): 711-719, 2015.
6. D. Dujak, A. Karač, Z.M. Jakšić, D. Vasiljević, S. Vrhovac, *Detecting a Structure in Two Dimensions Combining the Voronoi Tessellation and a Shape Factor*, *Scientific Technical Review*, 64 (1):13-20, 2014.
7. P. Cardiff, A. Karač, D. FitzPatrick, R. Flavin and A. Ivanković, *Development of Mapped Hill-Type Muscle Boundary Conditions for Finite Volume Simulations of the Hip Joint*, *International journal for numerical methods in biomedical engineering*, 30 (9), p.890-908, 2014.
8. P. Cardif, A. Karac, A. Ivankovic, *A Large Strain Finite Volume Method for Orthotropic Bodies with General Material Orientation*, *Computer Methods in Applied Mechanics and Engineering*, 268, p.318-335, 2014.
9. P. Cardif, A. Karac, D. FitzPatrick, R. Flavin, A. Ivankovic, *Development of a Hip Joint Model for Finite Volume Simulations*, *Journal of Biomechanical Engineering*, 136(1), 011006-1-8, 2014.
10. Žiga A., Karač A., Vukojić D., *Analytical and Numerical Stress Analysis of The Rotary Kiln Ring*, *Tehnički vjesnik*, 20(6), 941-946, 2013.
11. Ž. Tuković, A. Ivanković, A. Karač, *Finite volume stress analysis in multi-material linear elastic body*, *International journal for numerical methods in engineering*, 93:400-419, 2013.
12. V. Cooper, A. Ivankovic, A. Karac, D. McAuliffe and N. Murphy, *Effects of bond gap thickness on the fracture of nano-toughened epoxy adhesive joints*, *Polymer*, 53(24): 5540-5553, 2012.
13. M. Leonard, N. Murphy, A. Karač, A. Ivanković, *A Numerical Investigation of Spherical Void Growth in an Elastic-Plastic Continuum*, *Computational Materials Science*, 64:38-40, 2012.
14. P. Cardif, A. Karač, A. Ivanković, *Development of a Finite Volume Contact Solver Based on the Penalty Method*, *Computational Materials Science*, 64, p.283-284, 2012.
15. J. Mohan, A. Karač, Neal Murphy, Alojz Ivanković, *An Experimental and Numerical Investigation of the Mixed-Mode Fracture Toughness and Lap Shear Strength of Aerospace Grade Composite Joints*, *Key Engineering Materials: Advances in Fracture and Damage Mechanics X*, 488-489: 549-552, 2012.
16. D. McAuliffe, A. Karač, Neal Murphy, Alojz Ivanković, *Characterisation of the Fracture Energy and Toughening Mechanisms of a Nano-Toughened Epoxy Adhesive*, *Key Engineering Materials: Advances in Fracture and Damage Mechanics X*, 488-489: 573-576, 2012.
17. Karac, A., Blackman, B. R. K., Cooper, V. , Kinloch, A. J. , Rodriguez Sanchez, S. , Teo, W. S., Ivankovic, A. , *Modelling the fracture behaviour of adhesively-bonded joints as a function of test rate*, *Engineering Fracture Mechanics*, 78: 973-989, 2011.
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19. V. Kanyanta, A. Ivankovic, A. Karac, *Validation of a fluid-structure interaction numerical model for predicting flow transients in arteries*, *Journal of Biomechanics*, 42(11):1705-1712, 2009.
20. A. Karac, A. Ivankovic, *Investigating the behaviour of fluid-filled polyethylene containers under base drop impact: a combined experimental/numerical approach*. *International Journal of Impact Engineering*, 36(4): 621-631, 2009.
21. H. Parsa, A. Ivankovic, A. Karac. *Mechanical Properties Of Surrogate Lung Material Under Compression*. *Journal of Biomechanics*, 41(1): S353, 2008.
22. O. Alakija, A. Ivankovic, A. Karac, *Finite volume solution to high rate wave propagation through a lung alveoli stack*, *Solid Mechanics and Its Applications*, 124:281-288, 2005.

23. A. Karac and A. Ivankovic. *Modelling the Drop Impact Behaviour of Fluid-Filled Polyethylene Containers*. Fracture of Polymers, Composites and Adhesives II, Editors: B.R.K. Blackman, A. Pavan and J.G. Williams, ESIS publication 32, 253-264, 2003.
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## **Conferences and proceedings**

1. Spahić D., Karač A., *The computer modelling and biomechanical analysis of musculoskeletal systems in The AnyBody Modeling System*, 1st Conference of Medical and Biological Engineering in Bosnia and Herzegovina (CMBEBIH), 2015.
2. Hodžić E., Karač A., *Numerical analysis of the rotor of a high-speed*, 19th International Research/Expert Conference TMT, Barcelona, 2015.
3. Spahić D., Kačmarčík J., Lemeš S., Karač A., *Primjena e-learning platformi u visokom obrazovanju*, 9. Naučno-stručni skup sa međunarodnim učešćem "QUALITY 2015", Neum, B&H, 2015.
4. Lemeš S., Berberović E., Karač A., *Learning outcomes of mathematics and ICT in mechanical engineering curricula*, ME4CataLOgue Conference, Slavonski Brod, Croatia, 2014.
5. B. Zafošnik, M. Trako, I. Ciglarič, A. Karač, *Modelling of Cartilage Soft Tissue Indentation*, CMBBE 2014, 12th International Symposium: Computer Methods in Biomechanics and Biomedical Engineering, Amsterdam, 2014.
6. P. Cardif, A. Z. Tukovic, A. Karac, A. Ivankovic, *Nonlinear solid mechanics in OpenFOAM*, 9<sup>th</sup>OpenFOAMWorkshop, Zagreb, Croatia, 2014.
7. P. Cardif, Z. Tukovic, A. Karac, H. Jasak, A. Ivankovic, *OpenFOAM library for Fluid-Structure Interaction*, 9<sup>th</sup>OpenFOAM Workshop, Zagreb, Croatia, 2014.
8. J. Kacmarcik, A. Karac, *Mode-mixity in numerical simulation of FRMM test: local partitioning using cohesive zone*, 18th International Research/Expert Conference TMT, Budapest, 2014.
9. J. Kacmarcik, A. Karac, *Global and local partitioning of energy release rates in FEM simulation of FRMM test using cohesive zone*, 10<sup>TH</sup>scientific/research symposium with international participation,,Metallic and nonmetallic materials“, Bugojno, B&H, 2014.
10. D. Dujak, I. Lončarević, LJ. Budinski-Petković, A. Karac, S.B. Vrhovac, *Reversible random sequential adsorption of polydisperse mixtures on a triangular lattice*, YUCOMAT 2014, Herceg-Novi, Crna Gora, 2014.
11. Cardiff P., Karac A., Tukovic Z., Ivankovic A., An open-source finite volume method for computational solid mechanics, In proceeding of: Joint Symposium of Irish Mechanics Society and Irish Society for Scientific and Engineering Computation, At University College Dublin, Ireland, 2013.
12. M. Conroy, A. Ivankovic, A. Karac, N. Murphy, J.G Williams, *Numerical Analysis of mode mixity in Beam Like Geometries using cohesive zones*, 12th International Conference on the Science and Technology of Adhesion and Adhesives, York, UK, 4-6 September 2013.
13. M. Conroy, A. Ivankovic, A. Karac, J.G. Williams, *Mode-Mixity In Beam-Like Geometries: Global Partitioning with Cohesive Zones*, 36th Annual Meeting of The Adhesion Society, Hilton Daytona Beach, Daytona, FL, USA, 2013.
14. A. Karac, D. McAuliffe, N.Murphy, A. Ivankovic, *The Fracture Behaviour of Nano-modified Structural Epoxy Adhesive*, 36th Annual Meeting of The Adhesion Society, Hilton Daytona Beach, Daytona, FL, USA, 2013.
15. Kinloch, A. J. , Karac, A., Blackman, B. R. K., Cooper, V. , Rodriguez Sanchez, S. , Teo, W. S., Ivankovic, A. , *Modelling the fracture behaviour of adhesively-bonded joints as a function of test rate*, 36th Annual Meeting of The Adhesion Society, Hilton Daytona Beach, Daytona, FL, USA, 2013.
16. B. R. K. Blackman, M. Conroy, A. Ivankovic, A. Karac, A. J. Kinloch, J.G. Williams, *Mode-Mixity In Beam-Like Geometries: Linear Elastic Cases And Local Partitioning*, ECCM15 – 15<sup>th</sup> European Conference on Composite Materials, Venice, Italy, 2012.
17. H. Parsa, A. Ivankovic, A. Karac. *Surrogate lung material for impact studies: Development and testing*. U Zborniku 2012 IRCOBI Conference Proceedings - International Research Council on the Biomechanics of Injury, 662-671, 2012.
18. M. Leonard, A. Ivankovic, N. Murphy, A. Karac, *Micro-Mechanical Modeling of Particle-Matrix Interactions in Nano-Toughened Adhesives*, 7<sup>th</sup>OpenFOAMWorkshop, TechnischeUniversität Darmstadt, Germany, 2012.
19. P. Cardif, A. Karac, Z.Tukovic, A. Ivankovic, *Development of a Finite Volume Based Structural Solver for Large Rotation of Non-Orthogonal Meshes*, 7<sup>th</sup>OpenFOAMWorkshop, TechnischeUniversität Darmstadt, Germany, 2012.

20. D. McAuliffe, A. Karac, N.Murphy, A. Ivankovic, *Determination of the Cohesive Strength and Toughening Mechanisms of a Nano-Modified Adhesive under a Triaxial Stress State*, 35th Annual Meeting of The Adhesion Society, Astor Crowne, New Orleans, LA,USA, 2012.
21. M. Lenard, D. McAuliffe, A. Karac, A. Ivankovic, N.Murphy, *Micro-Mechanical Modelling of Void Growth and Damage Evolution of Nano-Toughened Structural Adhesion Using the Finite Volume Method*, 35th Annual Meeting of The Adhesion Society, Astor Crowne, New Orleans, LA,USA, 2012.
22. DijanaDujak, AleksandarKarač, Slobodan Vrhovac, *Effects of the inelasticity of granules and the density of granular systems on the cooling process*, The 43rd International October Conference on Mining and Metallurgy, 12-15 October, Kladovo, Serbia, 2011.
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24. D. McAuliffe, A. Karač, N. Murphy & A. Ivanković, *Transferability of Fracture Properties between Peel and TDCB Tests for a Nano-Toughened Epoxy Adhesive*, 6th International Conference on Fracture of Polymers, Composites and Adhesives, September 11-15, Les Diablerets, Switzerland, 2011.
25. Cardiff P, Ivankovic, A, FitzPatrick, D, Flavin, R, Karac, A. *Development of a Finite Volume Methodology for Linear Elastic Contact Problems*. Proceedings of the IWCMM, Limerick, Ireland. 2011.
26. J. Mohan, A. Karač, N. Murphy & A. Ivanković, *Mode I fatigue crack propagation in peel ply prepared composite joints*, 6th International Conference on Fracture of Polymers, Composites and Adhesives, September 11-15, Les Diablerets, Switzerland, 2011.
27. D. McAuliffe, A. Karač, N. Murphy & A. Ivanković. *Fracture of Nano-Toughened Epoxies*. Proceedings of the Irish Adhesion and Surface Coating Conference 2011, Institute of Technology Tallaght, September 1, 2011, Dublin, Ireland.
28. D. McAuliffe, A. Karač, N. Murphy & A. Ivanković, *The Fracture Energy and Toughening Mechanisms of Adhesive Joints Bonded with a Nano-Toughened Epoxy*, 11th Triennial International Conference on the Science and Technology of Adhesion and Adhesives, York, UK, 2011.
29. D. McAuliffe, A. Karač, N. Murphy and A. Ivanković, *Characterisation of the Fracture Energy and Toughening Mechanisms of a Nano-toughened Epoxy Adhesive*, 10th International Conference on Fracture and Damage Mechanics,Dubrovnik, 2011.
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31. M. Leonard, A. Ivankovic, N. Murphy, A. Karac, *Micro-Mechanical Modeling of Nano-Toughened Adhesives*, 6<sup>th</sup>OpenFOAMWorkshop PennState University, USA, 2011.
32. P. Cardif, A. Ivankovic, R. Flavin, D. FitzPatrick, A. Karac, *Numerical Analysis of The Hip Joint Bones in Contact*, 19<sup>th</sup>UK Conference of the Association for Computational Mechanics in Engineering, Heriot-Watt University, Edinburgh, 2011.
33. D. Spahić, P. Cardiff, R. Flavin, A. Karač, *Using Magnetic Resonance Images to Create 3D Models of Bones for Subsequent Numerical Analysis*, U Zborniku 15th International Research/Expert Conference TMT, Prague, 2011.
34. P. Cardif, A. Ivankovic, R. Flavin, D. FitzPatrick, A. Karac, *The contact stress analysis in OpenFOAM: Application to hip joint bones*, 6<sup>th</sup>OpenFOAMWorkshop PennState University, USA, 2011.
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36. A. Ivankovic, A. Karac, B. R. K. Blackman, V. Cooper, A. J. Kinloch, S. Rodriguez Sanchez and W. S. Teo, *Modelling the Fracture Behaviour of Adhesively-Bonded Joints as a Function of Test Rate - A Rate Dependent Czm Is Required to Predict the Full Range of Behaviour*,34<sup>th</sup>Annual Meeting of The Adhesion Society, Inc. Savannah, GA, USA, 2011.
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41. J. Kišija, J. Kačmarčík, A. Karač, *Determination of Stress Concentration Factors via Numerical Methods: Bar of Circular Cross Section with U-shaped Groove Subjected to Tension and Bending*, U Zborniku 13th International Research/Expert Conference TMT, Hammamet, Tunisia, 2009.
42. H. Parsa, A. Ivankovic, A. Karac, *Mechanical Properties of Fluid-Filled Gelatine Microcapsules*, U Zborniku 6<sup>th</sup> International Congress of Croatian Society of Mechanics, Dubrovnik, Croatia 2009.
43. H. Parsa, A. Ivankovic, A. Karac, *Characterisation Of A Surrogate Lung Material Made Of Polyurethane Foam And Fluid-Filled Gelatine Microcapsules*, U Zborniku 1<sup>st</sup> International Conference on Mathematical and Computational Biomedical Engineering – CMBE2009, Swansea, 2009.
44. V. Kanyanta, A. Ivankovic, A. Karac, *Accurate prediction of blood flow transients: a fluid-structure interaction approach*, U Zborniku 1<sup>st</sup> International Conference on Mathematical and Computational Biomedical Engineering – CMBE2009, Swansea, 2009.
45. V. Cooper, A. Ivankovic, A. Karac, D. McAuliffe, N. Murphy, Z. Tukovic. *The Effect of Constraint on the Fracture Toughness of Adhesively Bonded Joints*. U Zborniku 32nd Annual Meeting of the Adhesion Society, Savannah, Georgia, USA, 2009.
46. H. Parsa, A. Ivankovic, A. Karac. *Mechanical Characterisation of Fluid-Filled Gelatine Microcapsules*. U Zborniku Bioengineering in Ireland 15, Limerick, Republic of Ireland, 2009.
47. Kanyanta, V., Quinn, N., Kelly, S., Ivankovic, A. and Karac, A., *Fluid-Structure Interaction in Bioengineering II*. 3<sup>rd</sup> OpenFOAM Workshop, Milan, Italy 10-11 July 2008.
48. V. Cooper, A. Ivankovic, and A. Karac. *An experimental and numerical investigation into the effect of bond thickness and width on the fracture toughness, GIC, of adhesively bonded joints*. U Zborniku 5th International Conference on the Fracture of Polymers, Composites and Adhesives, Switzerland, 2008.
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50. A. Ziga, A. Karac, D. Vukojevic. *The Contact Stresses between Cement Kiln Tyre and Supporting Rollers*. U Zborniku 12th International Research/Expert Conference TMT, Istambul, Turska, 2008.
51. A. Safari, A. Ivankovic, A. Karac, M. Walter, E. Casey. *A two phase flow model of biofilm detachment*. U Zborniku 31st Annual Meeting of the Adhesion Society, Austin, Texas, 2008.
52. V. Cooper, A. Ivankovic, A. Karac. *Study of bond thickness effects on the mode I fracture toughness of adhesively bonded joints*. U Zborniku 31st Annual Meeting of the Adhesion Society, Austin, Texas, 2008.
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58. N. Quinn, A. Ivankovic, A. Karac, *A Combined Experimental and Numerical Investigation into Early Atherosclerosis*, 15th ACME Conference on Computational Mechanics in Engineering, Glasgow, 2007.
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63. V. Cooper, A. Ivankovic, A. Karac, A.J. Kinloch, S. Rodriguez Sanchez, W.S. Teo, *Stick-Slip Crack Propagation in Adhesively Bonded Joints*, 7<sup>th</sup> World Congress on Computational Mechanics, Los Angeles, 2006.
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