

## References

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1. Karlsson, K.F. and B. TomasÅström, *Manufacturing and applications of structural sandwich components*. Composites Part A: Applied Science and Manufacturing, 1997. **28**(2): p. 97-111.
2. Ashby, M.F. and L.J. Gibson, *Cellular solids: structure and properties*. Press Syndicate of the University of Cambridge, Cambridge, UK, 1997: p. 175-231.
3. Gibson, L. and M. Ashby, *Cellular Solids: Structure and Properties Pergamon Press*. England zbMATH, 1988.
4. Davis, R.A., *Delamination of Sandwich Composites*. 2010.
5. Pilling, J., *Strength of Sandwich Structures*. From Department of Materials Science and Engineering Michigan Tech,[Online], Available: <http://www.mse.mtu.edu/~drjohn/my4150/sandwich/sp2.html>, 2019.
6. Wittrick, W., *A theoretical analysis of the efficiency of sandwich construction under compressive end load*. 1945: HM Stationery Office.
7. Malekani, J., et al., *Status on pre-surgical deformation apparatus for fracture fixation plates*. Archives of Materials Science and Engineering, 2015. **72**(2): p. 53-60.
8. Kolat, K., G. Neşer, and Ç. Özses, *The effect of sea water exposure on the interfacial fracture of some sandwich systems in marine use*. Composite Structures, 2007. **78**(1): p. 11-17.
9. Gibson, L.J., *The hierarchical structure and mechanics of plant materials*. Journal of the royal society interface, 2012. **9**(76): p. 2749-2766.
10. Hubbard, R.P., *Flexure of layered cranial bone*. Journal of Biomechanics, 1971. **4**(4): p. 251-263.

11. Wegst, U.G., et al., *Bioinspired structural materials*. Nature materials, 2015. **14**(1): p. 23-36.
12. Lee, D.-J., et al., *Experimental characterization of temperature dependent dynamic properties of glass fiber reinforced polyurethane foams*. Polymer Testing, 2019. **74**: p. 30-38.
13. Lacki, P., A. Derlatka, and J. Winowiecka, *Analysis of the composite I-beam reinforced with PU foam with the addition of chopped glass fiber*. Composite Structures, 2019. **218**: p. 60-70.
14. Du, L. and G. Jiao, *Indentation study of Z-pin reinforced polymer foam core sandwich structures*. Composites Part A: Applied Science and Manufacturing, 2009. **40**(6-7): p. 822-829.
15. Nanayakkara, A., S. Feih, and A. Mouritz, *Experimental analysis of the through-thickness compression properties of z-pinned sandwich composites*. Composites Part A: Applied Science and Manufacturing, 2011. **42**(11): p. 1673-1680.
16. Nanayakkara, A., S. Feih, and A.P. Mouritz, *Experimental impact damage study of a z-pinned foam core sandwich composite*. Journal of Sandwich Structures & Materials, 2012. **14**(4): p. 469-486.
17. Zhang, B., et al., *Indentation of expanded polystyrene foams with a ball*. International Journal of Mechanical Sciences, 2019. **161**: p. 105030.
18. Vaz, M.F. and M. Fortes, *The indentation and nailing of cellular materials*. MRS Online Proceedings Library (OPL), 1990. **207**.
19. Flores-Johnson, E. and Q. Li, *Indentation into polymeric foams*. International Journal of Solids and Structures, 2010. **47**(16): p. 1987-1995.

20. Islam, M., et al., *Effects of impactor shape on the deformation and energy absorption of closed cell aluminium foams under low velocity impact*. *Materials & Design*, 2020. **191**: p. 108599.
21. Debnath, S., et al., *Chemical surface treatment of ultrahigh molecular weight polyethylene for improved adhesion to methacrylate resins*. *Journal of applied polymer science*, 2005. **96**(5): p. 1564-1572.
22. Etcheverry, M., et al., *Chemical grafting of metallocene-catalyzed functional polypropylene copolymer on glass substrates through surface modification*. *Journal of applied polymer science*, 2008. **109**(5): p. 2815-2822.
23. Bahramian, N., M. Atai, and M.R. Naimi-Jamal, *Ultra-high-molecular-weight polyethylene fiber reinforced dental composites: Effect of fiber surface treatment on mechanical properties of the composites*. *Dental Materials*, 2015. **31**(9): p. 1022-1029.
24. Agrawal, R., et al., *Effect of treatment on the thermal conductivity and thermal diffusivity of oil-palm-fiber-reinforced phenolformaldehyde composites*. *Journal of Polymer Science Part B: Polymer Physics*, 2000. **38**(7): p. 916-921.
25. Park, S.J. and J.S. Jin, *Effect of silane coupling agent on mechanical interfacial properties of glass fiber-reinforced unsaturated polyester composites*. *Journal of Polymer Science Part B: Polymer Physics*, 2003. **41**(1): p. 55-62.
26. Park, S.-J., M.-S. Cho, and J.-R. Lee, *Studies on the surface free energy of carbon-carbon composites: effect of filler addition on the ILSS of composites*. *Journal of Colloid and Interface Science*, 2000. **226**(1): p. 60-64.
27. Molitor, P. and T. Young, *Adhesives bonding of a titanium alloy to a glass fibre reinforced composite material*. *International journal of adhesion and adhesives*, 2002. **22**(2): p. 101-107.

28. Zakir, M., et al., *The role of silane coupling agents and universal primers in durable adhesion to dental restorative materials-a review*. Current Oral Health Reports, 2016. **3**(3): p. 244-253.
29. Khongwong, W., et al. *Influence of silane coupling agent and nano-filler on the properties of dental resin composite cements*. in *Key Engineering Materials*. 2016. Trans Tech Publ.
30. Matinlinna, J.P., P.K. Vallittu, and L.V. Lassila, *Effects of different silane coupling agent monomers on flexural strength of an experimental filled resin composite*. Journal of adhesion science and technology, 2011. **25**(1-3): p. 179-192.
31. Debnath, S., et al., *Silane treatment effects on glass/resin interfacial shear strengths*. Dental Materials, 2003. **19**(5): p. 441-448.
32. Kim, D.S., et al., *Study on the effect of silanization and improvement in the tensile behavior of graphene-chitosan-composite*. Polymers, 2015. **7**(3): p. 527-551.
33. Aydınoglu, A. and A.B.H. Yoruç, *Effects of silane-modified fillers on properties of dental composite resin*. Materials Science and Engineering: C, 2017. **79**: p. 382-389.
34. McDonough, W.G., J.M. Antonucci, and J.P. Dunkers, *Interfacial shear strengths of dental resin-glass fibers by the microbond test*. Dental Materials, 2001. **17**(6): p. 492-498.
35. Arkles, B., *Hydrophobicity, hydrophilicity and silane surface modification*. Gelest Inc, 2011. **215**: p. 547-1015.
36. Özcan, M., et al., *Effect of drying time of 3-methacryloxypropyltrimethoxysilane on the shear bond strength of a composite resin to silica-coated base/noble alloys*. Dental Materials, 2004. **20**(6): p. 586-590.
37. Matinlinna, J.P., et al., *The effect of a 3-methacryloxypropyltrimethoxysilane and vinyltriisopropoxysilane blend and tris (3-trimethoxysilylpropyl) isocyanurate on the*

- shear bond strength of composite resin to titanium metal*. Dental Materials, 2004. **20**(9): p. 804-813.
38. Mo, Q., et al., *Layer-by-layer self-assembled polyurea layers onto MAO surface for enhancing corrosion protection to aluminum alloy 6063*. Surface and Coatings Technology, 2021. **405**: p. 126653.
39. Ngeow, Y.W., et al., *Characterization of silica modified with silanes by using thermogravimetric analysis combined with infrared detection*. Rubber Chemistry and Technology, 2019. **92**(2): p. 237-262.
40. Brochier Salon, M.-C. and M.N. Belgacem, *Hydrolysis-condensation kinetics of different silane coupling agents*. Phosphorus, Sulfur, and Silicon, 2011. **186**(2): p. 240-254.
41. Cardenas, A.M., et al., *Effect of MDP-containing silane and adhesive used alone or in combination on the long-term bond strength and chemical interaction with lithium disilicate ceramics*. J Adhes Dent, 2017. **19**(3): p. 203-212.
42. Jin, X.-Z., J.K.-H. Tsoi, and J.P. Matinlinna, *A novel silane system for amalgam repair with resin composite: an in vitro study*. Silicon, 2019. **11**(5): p. 2321-2331.
43. Karmaker, A., A. Prasad, and N. Sarkar, *Characterization of adsorbed silane on fillers used in dental composite restoratives and its effect on composite properties*. Journal of Materials Science: Materials in Medicine, 2007. **18**(6): p. 1157-1162.
44. Matinlinna, J.P., A.H. Choi, and J.K.H. Tsoi, *Bonding promotion of resin composite to silica-coated zirconia implant surface using a novel silane system*. Clinical oral implants research, 2013. **24**(3): p. 290-296.
45. Matinlinna, J., L. Lassila, and P. Vallittu, *Evaluation of five dental silanes on bonding a luting cement onto silica-coated titanium*. Journal of dentistry, 2006. **34**(9): p. 721-726.

46. Matinlinna, J.P., L.V. Lassila, and P.K. Vallittu, *The effect of five silane coupling agents on the bond strength of a luting cement to a silica-coated titanium*. Dental materials, 2007. **23**(9): p. 1173-1180.
47. Randolph, L.D., et al., *Filler characteristics of modern dental resin composites and their influence on physico-mechanical properties*. Dental Materials, 2016. **32**(12): p. 1586-1599.
48. Taira, Y., M. Sakai, and T. Sawase, *Effects of primer containing silane and thiophosphate monomers on bonding resin to a leucite-reinforced ceramic*. Journal of dentistry, 2012. **40**(5): p. 353-358.
49. Meng, X., et al., *Effect of siloxane quantity and ph of silane coupling agents and contact angle of resin bonding agent on bond durability of resin cements to machinable ceramic*. Journal of Adhesive Dentistry, 2011. **13**(1): p. 71.
50. Queiroz, J.R.C., et al., *Surface characterization of feldspathic ceramic using ATR FT-IR and ellipsometry after various silanization protocols*. Dental Materials, 2012. **28**(2): p. 189-196.
51. Poulon-Quintin, A., et al., *Chemical surface modification of lithium disilicate needles of a silica-based ceramic after HF-etching and ultrasonic bath cleaning: Impact on the chemical bonding with silane*. Dental Materials, 2021. **37**(5): p. 832-839.
52. Matinlinna, J.P. and P.K. Vallittu, *Silane based concepts on bonding resin composite to metals*. J Contemp Dent Pract, 2007. **8**(2): p. 1-8.
53. Hoikkanen, M., et al., *Effect of silane treatment parameters on the silane layer formation and bonding to thermoplastic urethane*. Progress in Organic Coatings, 2011. **72**(4): p. 716-723.

54. Fiore, V., et al., *Effect of silane coupling treatment on the adhesion between polyamide and epoxy based composites reinforced with carbon fibers*. *Fibers*, 2020. **8**(8): p. 48.
55. Mittal, K.L., *Adhesion aspects in dentistry*. 2009: CRC Press.
56. Hooshmand, T., R. van Noort, and A. Keshvad, *Bond durability of the resin-bonded and silane treated ceramic surface*. *Dental Materials*, 2002. **18**(2): p. 179-188.
57. Fabianelli, A., et al., *The effect of different surface treatments on bond strength between leucite reinforced feldspathic ceramic and composite resin*. *Journal of dentistry*, 2010. **38**(1): p. 39-43.
58. de CARVALHO, R.F., et al., *Influence of silane heat treatment on bond strength of resin cement to a feldspathic ceramic*. *Dental materials journal*, 2011: p. 1105140134-1105140134.
59. Jiang, S., et al., *Effect of surface silanization of carbon fiber on mechanical properties of carbon fiber reinforced polyurethane composites*. *Composites Science and Technology*, 2015. **110**: p. 87-94.
60. Menner, A., et al., *Tough reinforced open porous polymer foams via concentrated emulsion templating*. *Polymer*, 2006. **47**(22): p. 7628-7635.
61. Nikje, M.M.A. and Z.M. Tehrani, *Polyurethane rigid foams reinforced by doubly modified nanosilica*. *Journal of Cellular Plastics*, 2010. **46**(2): p. 159-172.
62. Lee, L.J., et al., *Polymer nanocomposite foams*. *Composites science and technology*, 2005. **65**(15-16): p. 2344-2363.
63. Chen, L., et al., *Polymer nanocomposite foams*. *Journal of Materials Chemistry A*, 2013. **1**(12): p. 3837-3850.
64. Frydrych, M., et al., *Structure and mechanical properties of gelatin/sepiolite nanocomposite foams*. *Journal of materials chemistry*, 2011. **21**(25): p. 9103-9111.

65. Floren, M., et al., *Porous poly (d, l-lactic acid) foams with tunable structure and mechanical anisotropy prepared by supercritical carbon dioxide*. Journal of Biomedical Materials Research Part B: Applied Biomaterials, 2011. **99**(2): p. 338-349.
66. Kim, Y., et al., *Maximal cell density predictions for compressible polymer foams*. Polymer, 2013. **54**(2): p. 841-845.
67. Yang, G., et al., *Fabrication of well-controlled porous foams of graphene oxide modified poly (propylene-carbonate) using supercritical carbon dioxide and its potential tissue engineering applications*. The Journal of Supercritical Fluids, 2013. **73**: p. 1-9.
68. Maiti, M., et al., *Microcellular foam from ethylene vinyl acetate/polybutadiene rubber (EVA/BR) based thermoplastic elastomers for footwear applications*. Industrial & engineering chemistry research, 2012. **51**(32): p. 10607-10612.
69. Gong, W., et al., *Influence of cell structure parameters on the mechanical properties of microcellular polypropylene materials*. Journal of Applied Polymer Science, 2011. **122**(5): p. 2907-2914.
70. Park, C.B., L.K. Cheung, and S.-W. Song, *The effect of talc on cell nucleation in extrusion foam processing of polypropylene with CO<sub>2</sub> and isopentane*. Cellular Polymers, 1998. **17**(4): p. 221-251.
71. Han, C.D. and H.H. Yang, *Rheological behavior of blends of poly (methyl methacrylate)(PMMA) and poly (acrylonitrile-stat-styrene)-graft-polybutadiene (ABS)*. Journal of applied polymer science, 1987. **33**(4): p. 1221-1229.
72. Colton, J.S. and N.P. Suh, *Nucleation of microcellular foam: Theory and practice*. Polymer Engineering & Science, 1987. **27**(7): p. 500-503.

73. Colton, J. and N. Suh, *The nucleation of microcellular thermoplastic foam with additives: Part I: Theoretical considerations*. Polymer Engineering & Science, 1987. **27**(7): p. 485-492.
74. Colton, J. and N. Suh, *The nucleation of microcellular thermoplastic foam with additives: Part II: Experimental results and discussion*. Polymer Engineering & Science, 1987. **27**(7): p. 493-499.
75. Li, Y., et al., *Multilayered ferroelectric polymer composites with high energy density at elevated temperature*. Composites Science and Technology, 2021. **202**: p. 108594.
76. McClurg, R.B., *Design criteria for ideal foam nucleating agents*. Chemical Engineering Science, 2004. **59**(24): p. 5779-5786.
77. Han, X., et al., *Extrusion of polystyrene nanocomposite foams with supercritical CO<sub>2</sub>*. Polymer Engineering & Science, 2003. **43**(6): p. 1261-1275.
78. Zeng, C., et al., *Polymer–clay nanocomposite foams prepared using carbon dioxide*. Advanced Materials, 2003. **15**(20): p. 1743-1747.
79. Okamoto, M., et al., *Biaxial flow-induced alignment of silicate layers in polypropylene/clay nanocomposite foam*. Nano letters, 2001. **1**(9): p. 503-505.
80. Chandra, A., et al., *Microstructure and crystallography in microcellular injection-molded polyamide-6 nanocomposite and neat resin*. Polymer Engineering & Science, 2005. **45**(1): p. 52-61.
81. Lee, L., et al., *Nanocomposite polymer foams*. Compos. Sci. Technol., 2005. **65**: p. 2344-2363.
82. Siripurapu, S., et al., *Controlled foaming of polymer films through restricted surface diffusion and the addition of nanosilica particles or CO<sub>2</sub>-philic surfactants*. Macromolecules, 2005. **38**(6): p. 2271-2280.

83. Spitael, P., C.W. Macosko, and R.B. McClurg, *Block copolymer micelles for nucleation of microcellular thermoplastic foams*. *Macromolecules*, 2004. **37**(18): p. 6874-6882.
84. Shen, J., C. Zeng, and L.J. Lee, *Synthesis of polystyrene-carbon nanofibers nanocomposite foams*. *Polymer*, 2005. **46**(14): p. 5218-5224.
85. Shafi, M., K. Joshi, and R. Flumerfelt, *Bubble size distributions in freely expanded polymer foams*. *Chemical Engineering Science*, 1997. **52**(4): p. 635-644.
86. Mao, D., J.R. Edwards, and A. Harvey, *Prediction of foam growth and its nucleation in free and limited expansion*. *Chemical engineering science*, 2006. **61**(6): p. 1836-1845.
87. Feng, J.J. and C.A. Bertelo, *Prediction of bubble growth and size distribution in polymer foaming based on a new heterogeneous nucleation model*. *Journal of Rheology*, 2004. **48**(2): p. 439-462.
88. Gibson, L.J. and M.F. Ashby, *Cellular solids: structure and properties*. 1999: Cambridge university press.
89. Gibson, L.J. and M.F. Ashby, *The mechanics of three-dimensional cellular materials*. *Proceedings of the Royal Society of London. A. Mathematical and Physical Sciences*, 1982. **382**(1782): p. 43-59.
90. Siegmann, A., et al., *Mechanical behavior of reinforced polyurethane foams*. *Polymer Composites*, 1983. **4**(2): p. 113-119.
91. Haibach, K., et al., *Tailoring mechanical properties of highly porous polymer foams: Silica particle reinforced polymer foams via emulsion templating*. *Polymer*, 2006. **47**(13): p. 4513-4519.
92. Goods, S., et al., *Mechanical properties of a particle-strengthened polyurethane foam*. *Journal of Applied Polymer Science*, 1999. **74**(11): p. 2724-2736.

93. Saint-Michel, F., L. Chazeau, and J.-Y. Cavaillé, *Mechanical properties of high density polyurethane foams: II Effect of the filler size*. Composites Science and Technology, 2006. **66**(15): p. 2709-2718.
94. Khidas, Y., B. Haffner, and O. Pitois, *Critical size effect of particles reinforcing foamed composite materials*. Composites Science and Technology, 2015. **119**: p. 62-67.
95. Jiejun, W., et al., *Damping and sound absorption properties of particle reinforced Al matrix composite foams*. Composites Science and Technology, 2003. **63**(3-4): p. 569-574.
96. Gardella, J.A. and D.M. Hercules, *Static secondary ion mass spectrometry of polymer systems*. Analytical Chemistry, 1980. **52**(2): p. 226-232.
97. CHISNALL, B. and D. THORPE, *CHOPPED GLASS-FIBER REINFORCED POLYURETHANE MADE BY THE RRIM METHOD*. KUNSTSTOFFE-GERMAN PLASTICS, 1980. **70**(5): p. 288-294.
98. Masi, P., et al., *Tensile properties of fiberglass-reinforced polyester foams*. Journal of Applied Polymer Science, 1983. **28**(4): p. 1517-1525.
99. Masi, P., et al., *Tensile behavior of high-density thermosetting polyester foams*. Polymer Engineering & Science, 1984. **24**(7): p. 469-472.
100. Yeh, J., et al., *Preparation and insulation property studies of thermoplastic PMMA-silica nanocomposite foams*. Polymer composites, 2009. **30**(6): p. 715-722.
101. Madaleno, L., et al., *Processing and characterization of polyurethane nanocomposite foam reinforced with montmorillonite-carbon nanotube hybrids*. Composites Part A: Applied Science and Manufacturing, 2013. **44**: p. 1-7.

102. Aghili, A., *Preparation of PMMA/nano-SiO<sub>2</sub> nanocomposite and its application in formation of microcellular foams using supercritical CO<sub>2</sub>*. *Advances in Applied NanoBio-Technologies*, 2020. **1**(4): p. 105-114.
103. Kabir, M.E., M. Saha, and S. Jeelani, *Effect of ultrasound sonication in carbon nanofibers/polyurethane foam composite*. *Materials Science and Engineering: A*, 2007. **459**(1-2): p. 111-116.
104. Saha, M., M.E. Kabir, and S. Jeelani, *Enhancement in thermal and mechanical properties of polyurethane foam infused with nanoparticles*. *Materials Science and Engineering: A*, 2008. **479**(1-2): p. 213-222.
105. Dolomanova, V., et al., *Mechanical properties and morphology of nano-reinforced rigid PU foam*. *Journal of Cellular Plastics*, 2011. **47**(1): p. 81-93.
106. Zhang, L., et al., *MWNT reinforced polyurethane foam: Processing, characterization and modelling of mechanical properties*. *Composites Science and Technology*, 2011. **71**(6): p. 877-884.
107. Olszewski, A., et al., *The Impact of Isocyanate Index and Filler Functionalities on the Performance of Flexible Foamed Polyurethane/Ground Tire Rubber Composites*. *Polymers*, 2022. **14**(24): p. 5558.
108. Nikje, M.M.A. and Z.M. Tehrani, *Thermal and mechanical properties of polyurethane rigid foam/modified nanosilica composite*. *Polymer Engineering & Science*, 2010. **50**(3): p. 468-473.
109. Espadas-Escalante, J., et al., *Thermal conductivity and flammability of multiwall carbon nanotube/polyurethane foam composites*. *Journal of Cellular Plastics*, 2017. **53**(2): p. 215-230.

110. Li, C. and T.-W. Chou, *Elastic moduli of multi-walled carbon nanotubes and the effect of van der Waals forces*. Composites Science and Technology, 2003. **63**(11): p. 1517-1524.
111. Song, S.A., et al., *Mechanical and thermal properties of carbon foam derived from phenolic foam reinforced with composite particles*. Composite Structures, 2017. **173**: p. 1-8.
112. Li, Q., et al., *Effect of multi-walled carbon nanotubes on mechanical, thermal and electrical properties of phenolic foam via in-situ polymerization*. Composites Part A: Applied Science and Manufacturing, 2016. **82**: p. 214-225.
113. Eitan, A., et al., *Surface modification of multiwalled carbon nanotubes: toward the tailoring of the interface in polymer composites*. Chemistry of materials, 2003. **15**(16): p. 3198-3201.
114. Yaghoubi, A. and M.M.A. Nikje, *Silanization of multi-walled carbon nanotubes and the study of its effects on the properties of polyurethane rigid foam nanocomposites*. Composites Part A: Applied Science and Manufacturing, 2018. **109**: p. 338-344.
115. Ayatollahi, M., et al., *Effect of multi-walled carbon nanotube aspect ratio on mechanical and electrical properties of epoxy-based nanocomposites*. Polymer Testing, 2011. **30**(5): p. 548-556.
116. Sethi, J., et al., *The effect of multi-wall carbon nanotube morphology on electrical and mechanical properties of polyurethane nanocomposites*. Composites Part A: Applied Science and Manufacturing, 2017. **102**: p. 305-313.
117. Yan, D., et al., *Enhanced mechanical and thermal properties of rigid polyurethane foam composites containing graphene nanosheets and carbon nanotubes*. Polymer International, 2012. **61**(7): p. 1107-1114.

118. Chen, L., L.S. Schadler, and R. Ozisik, *An experimental and theoretical investigation of the compressive properties of multi-walled carbon nanotube/poly (methyl methacrylate) nanocomposite foams*. Polymer, 2011. **52**(13): p. 2899-2909.
119. Castellano, A., et al., *The ultrasonic C-Scan technique for damage evaluation of GFRP composite materials*. Int. J. Mech, 2016. **10**: p. 206-212.
120. Spronk, S., et al., *Comparing damage from low-velocity impact and quasi-static indentation in automotive carbon/epoxy and glass/polyamide-6 laminates*. Polymer Testing, 2018. **65**: p. 231-241.
121. Yahaya, R., et al., *Quasi-static penetration and ballistic properties of kenaf–aramid hybrid composites*. Materials & Design, 2014. **63**: p. 775-782.
122. Sutherland, L. and C.G. Soares, *The use of quasi-static testing to obtain the low-velocity impact damage resistance of marine GRP laminates*. Composites Part B: Engineering, 2012. **43**(3): p. 1459-1467.
123. Quadrino, A., et al., *Mechanical characterization of pultruded elements: Fiber orientation influence vs web-flange junction local problem. Experimental and numerical tests*. Composites Part B: Engineering, 2018. **142**: p. 68-84.
124. Castellano, A., et al. *Seismic response of a historic masonry construction isolated by stable unbonded fiber-reinforced elastomeric isolators (SU-FREI)*. in *Key Engineering Materials*. 2015. Trans Tech Publ.
125. Gliszczyński, A., *Numerical and experimental investigations of the low velocity impact in GFRP plates*. Composites Part B: Engineering, 2018. **138**: p. 181-193.
126. Yudhanto, A., et al., *Characterizing the influence of matrix ductility on damage phenomenology in continuous fiber-reinforced thermoplastic laminates undergoing quasi-static indentation*. Composite Structures, 2018. **186**: p. 324-334.

127. Aoki, Y., H. Suemasu, and T. Ishikawa, *Damage propagation in CFRP laminates subjected to low velocity impact and static indentation*. *Advanced Composite Materials*, 2007. **16**(1): p. 45-61.
128. Gemi, L., Ö.S. Şahin, and A. Akdemir, *Experimental investigation of fatigue damage formation of hybrid pipes subjected to impact loading under internal pre-stress*. *Composites Part B: Engineering*, 2017. **119**: p. 196-205.
129. Gemi, L., M. Kara, and A. Avcı, *Low velocity impact response of prestressed functionally graded hybrid pipes*. *Composites Part B: Engineering*, 2016. **106**: p. 154-163.
130. Lee, S.M. and P. Zahuta, *Instrumented impact and static indentation of composites*. *Journal of Composite Materials*, 1991. **25**(2): p. 204-222.
131. Sunith, B.L., K.P. Kumar, and K. JayaChristiyan. *Studies on factors influencing Low Velocity Impact of Composite Materials—A Review*. in *IOP Conference Series: Materials Science and Engineering*. 2021. IOP Publishing.
132. Kaczmarek, H. and S. Maison, *Comparative ultrasonic analysis of damage in CFRP under static indentation and low-velocity impact*. *Composites science and technology*, 1994. **51**(1): p. 11-26.
133. Bull, D., S. Spearing, and I. Sinclair, *Investigation of the response to low velocity impact and quasi-static indentation loading of particle-toughened carbon-fibre composite materials*. *Composites Part A: Applied Science and Manufacturing*, 2015. **74**: p. 38-46.
134. De Luca, A., et al., *Damage characterization of composite plates under low velocity impact using ultrasonic guided waves*. *Composites Part B: Engineering*, 2018. **138**: p. 168-180.

135. Palumbo, D. and U. Galietti, *Damage investigation in composite materials by means of new thermal data processing procedures*. Strain, 2016. **52**(4): p. 276-285.
136. Palumbo, D., et al., *A new rapid thermographic method to assess the fatigue limit in GFRP composites*. Composites Part B: Engineering, 2016. **103**: p. 60-67.
137. Pagliarulo, V., et al., *Impact damage investigation on composite laminates: comparison among different NDT methods and numerical simulation*. Measurement Science and Technology, 2015. **26**(8): p. 085603.
138. Baste, S. and C. Aristégui, *Induced anisotropy and crack systems orientations of a ceramic matrix composite under off-principal axis loading*. Mechanics of materials, 1998. **29**(1): p. 19-41.
139. Marguères, P. and F. Meraghni, *Damage induced anisotropy and stiffness reduction evaluation in composite materials using ultrasonic wave transmission*. Composites Part A: Applied Science and Manufacturing, 2013. **45**: p. 134-144.
140. Margueres, P., F. Meraghni, and M. Benzeggagh, *Comparison of stiffness measurements and damage investigation techniques for a fatigued and post-impact fatigued GFRP composite obtained by RTM process*. Composites Part A: Applied Science and Manufacturing, 2000. **31**(2): p. 151-163.
141. Reddy, S.S.S., et al., *Ultrasonic goniometry immersion techniques for the measurement of elastic moduli*. Composite Structures, 2005. **67**(1): p. 3-17.
142. Castellano, A., et al. *Ultrasonic immersion tests for mechanical characterization of multilayered anisotropic materials*. in *2014 IEEE Workshop on Environmental, Energy, and Structural Monitoring Systems Proceedings*. 2014. IEEE.
143. Andrews, E. and N. Moussa, *Failure mode maps for composite sandwich panels subjected to air blast loading*. International Journal of Impact Engineering, 2009. **36**(3): p. 418-425.

144. Petras, A. and M. Sutcliffe, *Failure mode maps for honeycomb sandwich panels*. Composite structures, 1999. **44**(4): p. 237-252.
145. Triantafillou, T.C., *Failure mode maps and minimum weight design for structural sandwich beams with rigid foam cores*. 1987, Massachusetts Institute of Technology.
146. Triantafillou, T.C. and L.J. Gibson, *Failure mode maps for foam core sandwich beams*. Materials Science and Engineering, 1987. **95**: p. 37-53.
147. Zenkert, D. and M. Burman, *Failure mode shifts during constant amplitude fatigue loading of GFRP/foam core sandwich beams*. International Journal of Fatigue, 2011. **33**(2): p. 217-222.
148. Raj, S. and L. Ghosn, *Failure maps for rectangular 17-4PH stainless steel sandwiched foam panels*. Materials Science and Engineering: A, 2008. **474**(1-2): p. 88-95.
149. Lim, T.S., C.S. Lee, and D.G. Lee, *Failure modes of foam core sandwich beams under static and impact loads*. Journal of composite materials, 2004. **38**(18): p. 1639-1662.
150. Crupi, V., G. Epasto, and E. Guglielmino, *Collapse modes in aluminium honeycomb sandwich panels under bending and impact loading*. International Journal of Impact Engineering, 2012. **43**: p. 6-15.
151. Zhu, F., et al., *Plastic deformation, failure and energy absorption of sandwich structures with metallic cellular cores*. International Journal of Protective Structures, 2010. **1**(4): p. 507-541.
152. Nguyen, M.Q., et al., *A review of explicit finite element software for composite impact analysis*. Journal of Composite Materials, 2005. **39**(4): p. 375-386.

153. Fan, X., I. Verpoest, and D. Vandepitte, *Finite element analysis of out-of-plane compressive properties of thermoplastic honeycomb*. Journal of Sandwich Structures & Materials, 2006. **8**(5): p. 437-458.
154. Chai, G.B. and S. Zhu, *A review of low-velocity impact on sandwich structures*. Proceedings of the Institution of Mechanical Engineers, Part L: Journal of Materials: Design and Applications, 2011. **225**(4): p. 207-230.
155. Chow, C. and T. Lu, *On evolution laws of anisotropic damage*. Engineering Fracture Mechanics, 1989. **34**(3): p. 679-701.
156. Raju, K., et al., *Impact damage resistance and tolerance of honeycomb core sandwich panels*. Journal of Composite Materials, 2008. **42**(4): p. 385-412.
157. Raju, K. and J. Tomblin. *Damage characteristics in sandwich panels subjected to static indentation using spherical indentors*. in *19th AIAA Applied Aerodynamics Conference*. 2001.
158. Bernard, M.L. and P.A. Lagace, *Impact resistance of composite sandwich plates*. Journal of Reinforced Plastics and Composites, 1989. **8**(5): p. 432-445.
159. Schubel, P.M., J.-J. Luo, and I.M. Daniel, *Impact and post impact behavior of composite sandwich panels*. Composites Part A: applied science and manufacturing, 2007. **38**(3): p. 1051-1057.
160. Tomblin, J., et al., *Review of damage tolerance for composite sandwich airframe structures*. 1999, WICHITA STATE UNIV KS.
161. Wen, H., et al. *Indentation, penetration and perforation of composite laminate and sandwich panels under quasi-static and projectile loading*. in *Key Engineering Materials*. 1998. Trans Tech Publ.
162. Stronge, W. and S. Matemilola, *Rate effect for impact damage initiation in CFRP laminates*. Le Journal de Physique IV, 1994. **4**(C8): p. C8-225-C8-230.

163. Olsson, R. and H.L. McManus, *Improved theory for contact indentation of sandwich panels*. AIAA journal, 1996. **34**(6): p. 1238-1244.
164. Lee, S.M. and T.K. Tsotsis, *Indentation failure behavior of honeycomb sandwich panels*. Composites science and technology, 2000. **60**(8): p. 1147-1159.
165. Zhu, S. and G.B. Chai, *Damage and failure mode maps of composite sandwich panel subjected to quasi-static indentation and low velocity impact*. Composite structures, 2013. **101**: p. 204-214.
166. Yalkin, H.E., B.M. Icten, and T. Alpyildiz, *Enhanced mechanical performance of foam core sandwich composites with through the thickness reinforced core*. Composites Part B: Engineering, 2015. **79**: p. 383-391.
167. Singh, A.K., et al., *Additive manufacturing of syntactic foams: Part 2: specimen printing and mechanical property characterization*. JOM, 2018. **70**(3): p. 310-314.
168. Garcia, C.D., et al., *Effect of arctic environment on flexural behavior of fly ash cenosphere reinforced epoxy syntactic foams*. Composites Part B: Engineering, 2018. **151**: p. 265-273.
169. Carlson, C.L. and D.C. Adriano, *Environmental impacts of coal combustion residues*. Journal of Environmental quality, 1993. **22**(2): p. 227-247.
170. Mathur, R., S. Chand, and T. Tezuka, *Optimal use of coal for power generation in India*. Energy policy, 2003. **31**(4): p. 319-331.
171. Bhattacharjee, U. and T.C. Kandpal, *Potential of fly ash utilisation in India*. Energy, 2002. **27**(2): p. 151-166.
172. Pandey, V.C. and N. Singh, *Impact of fly ash incorporation in soil systems*. Agriculture, ecosystems & environment, 2010. **136**(1-2): p. 16-27.
173. *Ministry of Environment and Forests (MoEF). 2015 the Gazette of India. Municipal Solid Waste (Management and Handling) Rules New Delhi, India 2015.*

174. Bhagat, N., V.S. Batra, and D. Katyal, *Preparation and Characterization of Ceramics from Coal Fly Ash*. Asian Journal of Chemistry, 2011. **23**(1): p. 71-73.
175. Arezoumandi, M., T.J. Looney, and J.S. Volz, *Effect of fly ash replacement level on the bond strength of reinforcing steel in concrete beams*. Journal of Cleaner Production, 2015. **87**: p. 745-751.
176. Hemalatha, T., et al., *Physico-chemical and mechanical characterization of high volume fly ash incorporated and engineered cement system towards developing greener cement*. Journal of Cleaner Production, 2016. **125**: p. 268-281.
177. Kovtun, M., et al., *Direct electric curing of alkali-activated fly ash concretes: a tool for wider utilization of fly ashes*. Journal of Cleaner Production, 2016. **133**: p. 220-227.
178. Paris, J.M., et al., *A review of waste products utilized as supplements to Portland cement in concrete*. Journal of Cleaner Production, 2016. **121**: p. 1-18.
179. Tang, Z., et al. *Current status and prospect of fly ash utilization in China*. in *Proc of World of Coal Ash Conference (WOCA)*. 2013.
180. Vargas, J. and A. Halog, *Effective carbon emission reductions from using upgraded fly ash in the cement industry*. Journal of Cleaner Production, 2015. **103**: p. 948-959.
181. Zhao, H., et al., *The properties of the self-compacting concrete with fly ash and ground granulated blast furnace slag mineral admixtures*. Journal of Cleaner Production, 2015. **95**: p. 66-74.
182. Wang, Y., et al., *Comparison study of phosphorus adsorption on different waste solids: fly ash, red mud and ferric-alum water treatment residues*. Journal of Environmental Sciences, 2016. **50**: p. 79-86.
183. Jain, A., *Status of Availability, Utilization and Potential of Fly ash use in Construction*. Ultratech Studio Report, 2016.

184. Yu, R. and Z. Shui, *Efficient reuse of the recycled construction waste cementitious materials*. Journal of cleaner production, 2014. **78**: p. 202-207.
185. Ukwattage, N.L., et al., *A laboratory-scale study of the aqueous mineral carbonation of coal fly ash for CO<sub>2</sub> sequestration*. Journal of cleaner production, 2015. **103**: p. 665-674.
186. Balamurugan, P. and M. Uthayakumar, *Influence of process parameters on Cu–Fly ash composite by powder metallurgy technique*. Materials and Manufacturing Processes, 2015. **30**(3): p. 313-319.
187. Kim, H.J., et al., *Composite electrospun fly ash/polyurethane fibers for absorption of volatile organic compounds from air*. Chemical Engineering Journal, 2013. **230**: p. 244-250.
188. Kuźnia, M., et al., *Comparative study on selected properties of modified polyurethane foam with fly ash*. International Journal of Molecular Sciences, 2022. **23**(17): p. 9725.
189. Akkoyun, M. and S. Akkoyun, *Blast furnace slag or fly ash filled rigid polyurethane composite foams: A comprehensive investigation*. Journal of Applied Polymer Science, 2019. **136**(20): p. 47433.
190. Barbero, E.J., *INTRODUCTION TO COMPOSITE MATERIALS DESIGN*. 1999.
191. Chawla, K.K., *Composite materials: science and engineering*. 2012: Springer Science & Business Media.
192. Caraculacu, A. and S. Coseri, *Isocyanates in polyaddition processes. Structure and reaction mechanisms*. Progress in Polymer Science, 2001. **26**(5): p. 799-851.
193. Frisch, K.C. and D. Klempner, *Advances in Urethane: Science & Technology*. Vol. 14. 1998: CRC Press.

194. Islam, M.R., M.D.H. Beg, and S.S. Jamari, *Development of vegetable-oil-based polymers*. Journal of applied polymer science, 2014. **131**(18).
195. Datta, J. and M. Włoch, *Progress in non-isocyanate polyurethanes synthesized from cyclic carbonate intermediates and di-or polyamines in the context of structure–properties relationship and from an environmental point of view*. Polymer Bulletin, 2016. **73**(5): p. 1459-1496.
196. ASTM:D792-13, *Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement*. ASTM International, West Conshohocken, (PA), 2013.
197. *Standard Test Method for apparent density of rigid cellular plastics*, in *D1622/D1622M – 14*. 2013, ASTM International. p. 1-4.
198. ASTM:D3039/D3039M-17, *Standard Test Method for Tensile Properties of Polymer Matrix Composite Materials*. ASTM International, West Conshohocken, (PA), 2017.
199. *Standard Test Method for Flatwise Compressive Properties of Sandwich Cores*, in *C365/C365M-11*. 2016, ASTM International. p. 1-8.
200. ASTM:C273/C273M-16, *Standard Test Method for Shear Properties of Sandwich Core Materials*. ASTM International, West Conshohocken, (PA), 2016.
201. ASTM:C393/C393M-16, *Standard Test Method for Core Shear Properties of Sandwich Constructions by Beam Flexure*. ASTM International, West Conshohocken, (PA), 2016.
202. *Standard Test Method for Measuring the Damage Resistance of a Fiber-Reinforced Polymer-Matrix Composite to a Concentrated Quasi-Static Indentation Force*, in *D1622/D1622M – 14*. 1998, ASTM International. p. 1-7.
203. Shahapurkar, K., et al., *Compressive behavior of cenosphere/epoxy syntactic foams in arctic conditions*. Composites Part B: Engineering, 2018. **135**: p. 253-262.

204. Zhang, Q., et al., *Enhanced dielectric tunability of Ba<sub>0.6</sub>Sr<sub>0.4</sub>TiO<sub>3</sub>/Poly (vinylidene fluoride) composites via interface modification by silane coupling agent*. Composites Science and Technology, 2016. **129**: p. 93-100.
205. Banghai, J., L. Zhibin, and L. Fangyun, *Failure mechanism of sandwich beams subjected to three-point bending*. Composite structures, 2015. **133**: p. 739-745.
206. Yang, C., Z.H. Zhuang, and Z.G. Yang, *Pulverized polyurethane foam particles reinforced rigid polyurethane foam and phenolic foam*. Journal of Applied Polymer Science, 2014. **131**(1).
207. Wilsea, M., K. Johnson, and M. Ashby, *Indentation of foamed plastics*. International Journal of Mechanical Sciences, 1975. **17**(7): p. 457-IN6.
208. Pareta, A.S., R. Gupta, and S. Panda, *Experimental investigation on fly ash particulate reinforcement for property enhancement of PU foam core FRP sandwich composites*. Composites Science and Technology, 2020. **195**: p. 108207.

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## List of Publications

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### International Journal (SCI)

1. Pareta A.S., Gupta Ritesh, Panda S.K., Experimental investigation on fly ash particulate reinforcement for property enhancement of PU foam core FRP sandwich composites, *Composites Science and Technology*, 195(2020). <https://doi.org/10.1016/j.compscitech.2020.108207>
2. Pareta A.S., Singh P. K., Sarkar A., Panda S.K., Quasi-static indentation damage mechanics of PU foam core reinforced with fly ash particulate. *Journal of Cellular Plastics*. 2023;0(0). <https://doi.org/10.1177/0021955X231154620>
3. Pareta A.S., Singh P. K., Sarkar A., Panda S.K., Quasi-static indentation damage mechanics of FA-PUF sandwich composites. (Communicated in *Thin-Walled Structures*, ELESVIER)