References

Aboudi, J., 1998. Micromechanical prediction of the effective coefficients of thermo-piezoelectric multiphase composites. *Journal of intelligent material systems and structures*, *9*(9), pp.713-722.

Akavci, S.S., 2007. Buckling and free vibration analysis of symmetric and antisymmetric laminated composite plates on an elastic foundation. *Journal of Reinforced Plastics and Composites*, *26*(18), pp.1907-1919.

Ashton, J. E., and Whitney, J. M. (1970). Theory of Laminated Plates. *Technomic Publication Co.*, Stanford, CT.

Aydogdu, M., 2005. Vibration analysis of cross-ply laminated beams with general boundary conditions by Ritz method. *International Journal of Mechanical Sciences*, *47*(11), pp.1740-1755.

Aydogdu, M., 2009. A new shear deformation theory for laminated composite plates. *Composite Structures*, *89*(1), pp.94-101.

Alesadi, A., Galehdari, M. and Shojaee, S., 2017. Free vibration and buckling analysis of cross-ply laminated composite plates using Carrera's unified formulation based on Isogeometric approach. *Computers & Structures*, *183*, pp.38-47.

Alipour, M.M., 2016. An analytical approach for bending and stress analysis of cross/angle-ply laminated composite plates under arbitrary non-uniform loads and elastic foundations. *Archives of Civil and Mechanical Engineering*, *16*, pp.193-210.

Alibeigloo, A. and Liew, K.M., 2015. Elasticity solution of free vibration and bending behavior of functionally graded carbon nanotube-reinforced composite beam with thin piezoelectric layers using differential quadrature method. *International Journal of Applied Mechanics*, *7*(01), p.1550002.

Akhras, G., Cheung, M.S. and Li, W., 1994. Finite strip analysis of anisotropic laminated composite plates using higher-order shear deformation theory. *Computers & structures*, *52*(3), pp.471-477.

Barbero, E.J., Reddy, J.N. and Teply, J.L., 1990. General two-dimensional theory of laminated cylindrical shells. *AIAA journal*, *28*(3), pp.544-553.

Behjat, B., Salehi, M., Armin, A., Sadighi, M. and Abbasi, M., 2011. Static and dynamic analysis of functionally graded piezoelectric plates under mechanical and electrical loading. *Scientia Iranica*, *18*(4), pp.986-994.

Bouguenina, O., Belakhdar, K., Tounsi, A. and Adda Bedia, E.A., 2015. Numerical analysis of FGM plates with variable thickness subjected to thermal buckling. *Steel Compos. Struct., Int. J*, *19*(3), pp.679-695.

Birman, V. and Kardomateas, G.A., 2018. Review of current trends in research and applications of sandwich structures. *Composites Part B: Engineering*, *142*, pp.221-240.

Bailey, T. and Hubbard Jr, J.E., 1985. Distributed piezoelectric-polymer active vibration control of a cantilever beam. *Journal of Guidance, Control, and Dynamics*, *8*(5), pp.605-611.

Barati, M.R., Sadr, M.H. and Zenkour, A.M., 2016. Buckling analysis of higher order graded smart piezoelectric plates with porosities resting on elastic foundation. *International Journal of Mechanical Sciences*, *117*, pp.309-320.

Barati, M.R., Shahverdi, H. and Zenkour, A.M., 2017. Electro-mechanical vibration of smart piezoelectric FG plates with porosities according to a refined four-variable theory. *Mechanics of Advanced Materials and Structures*, *24*(12), pp.987-998.

Baz, A. and Poh, S., 1988. Performance of an active control system with piezoelectric actuators. *Journal of sound and Vibration*, *126*(2), pp.327-343.

Bennett, J. and Hayward, G., 1997. Design of 1-3 piezocomposite hydrophones using finite element analysis. *IEEE transactions on ultrasonics, ferroelectrics, and frequency control*, *44*(3), pp.565-574.

Bhaskar, K., Varadan, T.K. and Ali, J.S.M., 1996. Thermoelastic solutions for orthotropic and anisotropic composite laminates. *Composites Part B: Engineering*, *27*(5), pp.415-420.

Bhaskar, K. and Varadan, T.K., 1989. Refinement of higher-order laminated plate theories. *AIAA journal*, *27*(12), pp.1830-1831.

Beheshti-Aval, S.B. and Lezgy-Nazargah, M., 2013. Coupled refined layerwise theory for dynamic free and forced response of piezoelectric laminated composite and sandwich beams. *Meccanica*, *48*(6), pp.1479-1500.

Brischetto, S., Leetsch, R., Carrera, E., Wallmersperger, T. and Kröplin, B., 2008. Thermo-mechanical bending of functionally graded plates. *Journal of Thermal Stresses*, *31*(3), pp.286-308.

Brischetto, S., Tornabene, F., Fantuzzi, N. and Viola, E., 2016. 3D exact and 2D generalized differential quadrature models for free vibration analysis of functionally graded plates and cylinders. *Meccanica*, *51*(9), pp.2059-2098.

Bhar, A., Phoenix, S.S. and Satsangi, S.K., 2010. Finite element analysis of laminated composite stiffened plates using FSDT and HSDT: A comparative perspective. *Composite Structures*, *92*(2), pp.312-321.

Cook, R.D., Malkus, D.S., Plesha, M.E., Witt, 2007. Concept and Applications of Finite Element Analysis, fourth ed., Wiley, Singapore.

Chopra, I., 2002. Review of state of art of smart structures and integrated systems. *AIAA journal*, *40*(11), pp.2145-2187.

Cho, M. and Parmerter, R.R., 1993. Efficient higher order composite plate theory for general lamination configurations. *AIAA journal*, *31*(7), pp.1299-1306.

Campbell, F.C., 2004. Adhesive Bonding and Integrally Cocured Structure: A Way to Reduce Assembly Costs through Parts Integration. *Manufacturing Processes for Advanced Composites; Elsevier Science: Amsterdam, The Netherlands*, pp.241-301.

Chandrashekhara, K. and Agarwal, A.N., 1993. Active vibration control of laminated composite plates using piezoelectric devices: a finite element approach. *Journal of Intelligent Material Systems and Structures*, *4*(4), pp.496-508.

Chalak, H.D., Chakrabarti, A., Iqbal, M.A. and Sheikh, A.H., 2012a. An improved C0 FE model for the analysis of laminated sandwich plate with soft core. *Finite Elements in Analysis and Design*, *56*, pp.20-31.

Chalak, H.D., Chakrabarti, A., Iqbal, M. and Sheikh, A.H., 2013. Free vibration analysis of laminated soft core sandwich plates. *Journal of Vibration and Acoustics*, *135*(1).

Chalak, H.D., Chakrabarti, A., Iqbal, M.A. and Sheikh, A.H., 2012b. Vibration of laminated sandwich beams having soft core. *Journal of Vibration and Control*, *18*(10), pp.1422-1435.

Chakrabarti, A. and Sheikh, A.H., 2004a. A new triangular element to model inter-laminar shear stress continuous plate theory. *International journal for numerical methods in engineering*, *60*(7), pp.1237-1257.

Chakrabarti, A. and Sheikh, A.H., 2004b. Vibration of laminate-faced sandwich plate by a new refined element. *Journal of Aerospace Engineering*, *17*(3), pp.123-134.

Cho, M. and Oh, J., 2004. Higher order zig-zag theory for fully coupled thermo-electric–mechanical smart composite plates. *International journal of solids and structures*, *41*(5-6), pp.1331-1356.

Cetkovic, M., 2015. Thermo-mechanical bending of laminated composite and sandwich plates using layerwise displacement model. *Composite Structures*, *125*, pp.388-399.

Carrera, E., Fazzolari, F.A. and Cinefra, M., 2016. *Thermal stress analysis of composite beams, plates and shells: Computational modelling and applications*. Academic Press.

Carrera, E., 2003. Theories and finite elements for multilayered plates and shells: a unified compact formulation with numerical assessment and benchmarking. *Archives of Computational Methods in Engineering*, *10*(3), pp.215-296.

Carrera, E. and Antona, E., 1995. *A class of two-dimensional theories for anisotropic multilayered plates analysis*. Accademia delle Scienze.

Carrera, E., 1996. C0 Reissner–Mindlin multilayered plate elements including zig-zag and interlaminar stress continuity. *International Journal for Numerical Methods in Engineering*, *39*(11), pp.1797-1820.

Carrera, E., 1999a. Multilayered shell theories accounting for layerwise mixed description, Part 1: Governing equations. *AIAA journal*, *37*(9), pp.1107-1116.

Carrera, E., 1999b. Multilayered shell theories accounting for layerwise mixed description, Part 2: Numerical evaluations. *AIAA journal*, *37*(9), pp.1117-1124.

Carrera, E., 2004. On the use of the Murakami's zig-zag function in the modeling of layered plates and shells. *Computers & Structures*, *82*(7-8), pp.541-554.

Carrera, E., 2005. Transverse normal strain effect on thermal stress analysis of homogeneous and layered plates. *AIAA journal*, *43*(10), pp.2232-2242.

Carrera, E., Boscolo, M. and Robaldo, A., 2007. Hierarchic multilayered plate elements for coupled multifield problems of piezoelectric adaptive structures: formulation and numerical assessment. *Archives of computational methods in engineering*, *14*(4), pp.383-430.

Carrera, E., Brischetto, S. and Robaldo, A., 2008. Variable kinematic model for the analysis of functionally graded material plates. *AIAA journal*, *46*(1), pp.194-203.

Cinefra, M., Carrera, E., Della Croce, L. and Chinosi, C., 2012. Refined shell elements for the analysis of functionally graded structures. *Composite Structures*, *94*(2), pp.415-422.

Cinefra, M., Chinosi, C. and Della Croce, L., 2013. MITC9 shell elements based on refined theories for the analysis of isotropic cylindrical structures. *Mechanics of Advanced Materials and Structures*, *20*(2), pp.91-100.

Civalek, Ö., 2007. Numerical analysis of free vibrations of laminated composite conical and cylindrical shells: discrete singular convolution (DSC) approach. *Journal of Computational and Applied Mathematics*, *205*(1), pp.251-271.

Civalek, Ö., 2017. Free vibration of carbon nanotubes reinforced (CNTR) and functionally graded shells and plates based on FSDT via discrete singular convolution method. *Composites Part B: Engineering*, *111*, pp.45-59.

Das, T. and Nath, J.K., 2021. Zigzag Theory for Piezoelectric-Layer-Integrated Functionally Graded Material Plates. *AIAA Journal*, pp.1-16.

Daikh, A.A. and Zenkour, A.M., 2020. Bending of Functionally Graded Sandwich Nanoplates Resting on Pasternak Foundation under Different Boundary Conditions. *Journal of Applied and Computational Mechanics*.

Davalos, J.F., Kim, Y. and Barbero, E.J., 1994. Analysis of laminated beams with a layer-wise constant shear theory. *Composite Structures*, *28*(3), pp.241-253.

Dong, C. and Davies, I.J., 2015. Flexural strength of bidirectional hybrid epoxy composites reinforced by E glass and T700S carbon fibres. *Composites Part B: Engineering*, *72*, pp.65-71.

Dong, S.B., Pister, K.S. and Taylor, R.L., 1962. On the theory of laminated anisotropic shells and plates. *Journal of the Aerospace Sciences*, *29*(8), pp.969-975.

Di Sciuva, M., 1986. Bending, vibration and buckling of simply supported thick multilayered orthotropic plates: an evaluation of a new displacement model. *Journal of Sound and Vibration*, *105*(3), pp.425-442.

Di Sciuva, M., 1992. Multilayered anisotropic plate models with continuous interlaminar stresses. *Composite Structures*, *22*(3), pp.149-167.

Ferreira, A.J., Barros, J.A. and Marques, A.T., 1991. Finite element analysis of sandwich structures. In *Composite structures* (pp. 105-118). Springer, Dordrecht.

Ferreira, A.J.M., 2005. Analysis of composite plates using a layerwise theory and multiquadrics discretization. *Mechanics of Advanced Materials and Structures*, *12*(2), pp.99-112.

Ferreira, A.J.M., Carrera, E., Cinefra, M. and Roque, C.M.C., 2013. Radial basis functions collocation for the bending and free vibration analysis of laminated plates using the Reissner-Mixed Variational Theorem. *European Journal of Mechanics-A/Solids*, *39*, pp.104-112.

Filippi, M., Carrera, E. and Zenkour, A.M., 2015. Static analyses of FGM beams by various theories and finite elements. *Composites Part B: Engineering*, *72*, pp.1-9.

Flores, F.G., 2014. Implementation of the refined zigzag theory in shell elements with large displacements and rotations. *Composite Structures*, *118*, pp.560-570.

Gautschi, G., 2002. Piezoelectric sensors. In *Piezoelectric Sensorics* (pp.73-91). Springer, Berlin, Heidelberg.

Garção, J.S., Soares, C.M., Soares, C.M. and Reddy, J.N., 2004. Analysis of laminated adaptive plate structures using layerwise finite element models. *Computers & structures*, *82*(23-26), pp.1939-1959.

Grover, N., Singh, B.N. and Maiti, D.K., 2015. Free vibration and buckling characteristics of laminated composite and sandwich plates implementing a secant function based shear deformation theory. *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science*, *229*(3), pp.391-406.

Grover, N., Maiti, D.K. and Singh, B.N., 2013a. A new inverse hyperbolic shear deformation theory for static and buckling analysis of laminated composite and sandwich plates. *Composite Structures*, *95*, pp.667-675.

Grover, N., Singh, B.N. and Maiti, D.K., 2013b. New nonpolynomial shear-deformation theories for structural behavior of laminated-composite and sandwich plates. *AIAA journal*, *51*(8), pp.1861-1871.

Grover, N., Singh, B.N. and Maiti, D.K., 2013c. Analytical and finite element modeling of laminated composite and sandwich plates: An assessment of a new shear deformation theory for free vibration response. *International Journal of Mechanical Sciences*, *67*, pp.89-99.

Goswami, S. and Becker, W., 2016. Analysis of sandwich plates with compressible core using layerwise refined plate theory and interface stress continuity. *Journal of Composite Materials*, *50*(2), pp.201-217.

Gherlone, M., 2013. On the use of zigzag functions in equivalent single layer theories for laminated composite and sandwich beams: a comparative study and some observations on external weak layers. *Journal of Applied Mechanics*, *80*(6).

Gupta, A. and Ghosh, A., 2019. Static and transient analysis of sandwich composite plates using isogeometric analysis. *Mechanics of Advanced Materials and Structures*, *26*(1), pp.81-87.

Garg, N., Chakladar, N.D., Prusty, B.G., Song, C. and Phillips, A.W., 2020. Modelling of laminated composite plates with weakly bonded interfaces using scaled boundary finite element method. *International Journal of Mechanical Sciences*, *170*, p.105349.

Halpin, J.C. and Karoos, J.L., 1978. Strength of discontinuous reinforced composites: I. Fiber reinforced composites. *Polymer Engineering & Science*, *18*(6), pp.496-504.

Hanagud, S., Obal, M.W. and Calise, A.J., 1992. Optimal vibration control by the use of piezoceramic sensors and actuators. *Journal of Guidance, Control, and Dynamics*, *15*(5), pp.1199-1206.

Han, J.H. and Lee, I., 1998. Analysis of composite plates with piezoelectric actuators for vibration control using layerwise displacement theory. *Composites Part B: Engineering*, *29*(5), pp.621-632.

Heyliger, P., 1994. Static behavior of laminated elastic/piezoelectric plates. *AIAA journal*, *32*(12), pp.2481-2484.

Hildebrand, F.B., Reissner, E. and Thomas, G.B., 1949. *Notes on the foundations of the theory of small displacements of orthotropic shells* (Vol. 1833). Washington, DC: National Advisory Committee for Aeronautics.

He, Y., Yang, H. and Deeks, A.J., 2012. An Element-free Galerkin (EFG) scaled boundary method. *Finite Elements in Analysis and Design*, *62*, pp.28-36.

Iurlaro, L., Gherlone, M.D., Di Sciuva, M. and Tessler, A., 2013. Assessment of the refined zigzag theory for bending, vibration, and buckling of sandwich plates: a comparative study of different theories. *Composite Structures*, *106*, pp.777-792.

Joshan, Y.S., Santapuri, S. and Grover, N., 2020. Analysis of laminated piezoelectric composite plates using an inverse hyperbolic coupled plate theory. *Applied Mathematical Modelling*, *82*, pp.359-378.

Jing, H.S. and Liao, M.L., 1989. Partial hybrid stress element for the analysis of thick laminated composite plates. *International journal for numerical methods in Engineering*, *28*(12), pp.2813-2827.

Kapranos, P., Brabazon, D., Midson, S.P., Naher, S. and Haga, T., 2014. Advanced casting methodologies: Inert environment vacuum casting and solidification, die casting, compocasting, and roll casting. *Comprehensive Materials Proceeding*, *5*, pp.3-37.

Krautkrämer, J. and Krautkrämer, H., 2013. *Ultrasonic testing of materials*. Springer Science & Business Media.

Kapuria, S. and Kumari, P., 2012. Multiterm extended Kantorovich method for three-dimensional elasticity solution of laminated plates. *Journal of applied mechanics*, *79*(6).

Kapuria, S. and Kumari, P., 2013. Extended Kantorovich method for coupled piezoelasticity solution of piezolaminated plates showing edge effects. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, *469*(2151), p.20120565.

Kapuria, S., Dumir, P.C. and Ahmed, A., 2003. An efficient coupled layerwise theory for dynamic analysis of piezoelectric composite beams. *Journal of Sound and Vibration*, *261*(5), pp.927-944.

Kapuria, S., 2004. A coupled zig-zag third-order theory for piezoelectric hybrid cross-ply plates. *J. Appl. Mech.*, *71*(5), pp.604-614.

Kapuria, S. and Achary, G.G.S., 2005. A coupled zigzag theory for the dynamics of piezoelectric hybrid cross-ply plates. *Archive of Applied Mechanics*, *75*(1), pp.42-57.

Kapuria, S. and Kulkarni, S.D., 2009. Static electromechanical response of smart composite/sandwich plates using an efficient finite element with physical and electric nodes. *International Journal of Mechanical Sciences*, *51*(1), pp.1-20.

Kapuria, S. and Hagedorn, P., 2007. Unified efficient layerwise theory for smart beams with segmented extension/shear mode, piezoelectric actuators and sensors. *Journal of Mechanics of Materials and Structures*, *2*(7), pp.1267-1298.

Kumari, P. and Behera, S., 2017. Three-dimensional free vibration analysis of levy-type laminated plates using multi-term extended Kantorovich method. *Composites Part B: Engineering*, *116*, pp.224-238.

Koiter, W.T., 1960. A consistent first approximation in the general theory of thin elastic shells. *The theory of thin elastic shells*, pp.12-33.

Karama, M., Afaq, K.S. and Mistou, S., 2009. A new theory for laminated composite plates. *Proceedings of the Institution of Mechanical Engineers, Part L: Journal of Materials: Design and Applications*, *223*(2), pp.53-62.

Kulkarni, K., Singh, B.N. and Maiti, D.K., 2015. Analytical solution for bending and buckling analysis of functionally graded plates using inverse trigonometric shear deformation theory. *Composite Structures*, *134*, pp.147-157.

Kant, T., Pendhari, S.S. and Desai, Y.M., 2007. An efficient semi-analytical model for composite and sandwich plates subjected to thermal load. *Journal of Thermal Stresses*, *31*(1), pp.77-103.

Kant, T., Gupta, A.B., Pendhari, S.S. and Desai, Y.M., 2008. Elasticity solution for cross-ply composite and sandwich laminates. *Composite Structures*, *83*(1), pp.13-24.

Kant, T., 1982. Numerical analysis of thick plates. *Computer methods in Applied Mechanics and engineering*, *31*(1), pp.1-18.

Kant, T and Swaminathan, K., 2002. Analytical solutions for the static analysis of laminated composite and sandwich plates based on a higher order refined theory. *Composite structures*, *56*(4), pp.329-344.

Kant, T. and Swaminathan, K., 2001. Analytical solutions for free vibration of laminated composite and sandwich plates based on a higher-order refined theory. *Composite structures*, *53*(1), pp.73-85.

Kant, T. and Manjunatha, B.S., 1988. An unsymmetric FRC laminate C° finite element model with 12 degrees of freedom per node. *Engineering Computations*, 5(4), pp.300-308.

Kant, T., Arora, C.P. and Varaiya, J.H., 1992. Finite element transient analysis of composite and sandwich plates based on a refined theory and a mode superposition method. *Composite structures*, *22*(2), pp.109-120.

Khdeir, A.A. and Reddy, J.N., 1989. Exact solutions for the transient response of symmetric cross-ply laminates using a higher-order plate theory. *Composites Science and Technology*, *34*(3), pp.205-224.

Kerur, S.B. and Ghosh, A., 2011a. Active vibration control of composite plate using AFC actuator and PVDF sensor. *International Journal of Structural Stability and Dynamics*, *11*(02), pp.237-255.

Kerur, S.B. and Ghosh, A., 2011b. Active control of geometrically non-linear transient response of smart laminated composite plate integrated with AFC actuator and PVDF sensor. *Journal of intelligent material systems and structures*, *22*(11), pp.1149-1160.

Khandelwal, R.P., Chakrabarti, A. and Bhargava, P., 2013a. An efficient FE model based on combined theory for the analysis of soft core sandwich plate. *Computational Mechanics*, *51*(5), pp.673-697.

Khandelwal, R.P., Chakrabarti, A. and Bhargava, P., 2013b. Vibration and buckling analysis of laminated sandwich plate having soft core. *International Journal of Structural Stability and Dynamics*, *13*(08), p.1350034.

Khandelwal, R.P., Chakrabarti, A. and Bhargava, P., 2013c. An efficient hybrid plate model for accurate analysis of smart composite laminates. *Journal of intelligent material systems and structures*, *24*(16), pp.1927-1950.

Khandelwal, R.P., Chakrabarti, A. and Bhargava, P., 2014. Static and dynamic control of smart composite laminates. *AIAA Journal*, *52*(9), pp.1896-1914.

Khdeir, A.A. and Reddy, J.N., 1989. On the forced motions of antisymmetric cross-ply laminated plates. *International journal of mechanical sciences*, *31*(7), pp.499-510.

Khdeir, A.A. and Reddy, J.N., 1999. Free vibrations of laminated composite plates using second-order shear deformation theory. *Computers & Structures*, *71*(6), pp.617-626.

Kulkarni, S.D. and Kapuria, S., 2007. A new discrete Kirchhoff quadrilateral element based on the third-order theory for composite plates. *Computational Mechanics*, *39*(3), pp.237-246.

Kulkarni, S.D. and Kapuria, S., 2008. Free vibration analysis of composite and sandwich plates using an improved discrete Kirchhoff quadrilateral element based on third-order zigzag theory. *Computational mechanics*, *42*(6), pp.803-824.

Kazancı, Z., 2016. A review on the response of blast loaded laminated composite plates. *Progress in Aerospace Sciences*, *81*, pp.49-59.

Lage, R.G., Soares, C.M., Soares, C.M. and Reddy, J.N., 2004. Layerwise partial mixed finite element analysis of magneto-electro-elastic plates. *Computers & Structures*, *82*(17-19), pp.1293-1301.

LomtePatil, Y.T., Kant, T. and Desai, Y.M., 2018. Comparison of three dimensional elasticity solutions for functionally graded plates. *Composite Structures*, *202*, pp.424-435.

Lo, K.H., Christensen, R.M. and Wu, E.M., 1977. A high-order theory of plate deformation—Part 2: Laminated plates. *Journal of Applied Mechanics, 44*, pp.669-676.

Levinson, M., 1980. An accurate, simple theory of the statics and dynamics of elastic plates. *Mechanics Research Communications*, *7*(6), pp.343-350.

Lee, S.J., Reddy, J.N. and Rostam-Abadi, F., 2004. Transient analysis of laminated composite plates with embedded smart-material layers. *Finite Elements in Analysis and Design*, *40*(5-6), pp.463-483.

Lee, H.J. and Saravanos, D.A., 1996. Coupled layerwise analysis of thermopiezoelectric composite beams. *AIAA journal*, *34*(6), pp.1231-1237.

Li, W. and Shen, H., 2018. A layerwise finite element formulation of laminated composite cylindrical shells with piezoelectric layers. *Journal of Mechanical Science and Technology*, *32*(2), pp.731-741.

Li, C., Man, H., Song, C. and Gao, W., 2013. Fracture analysis of piezoelectric materials using the scaled boundary finite element method. *Engineering Fracture Mechanics*, *97*, pp.52-71.

Liu, B., Ferreira, A.J.M., Xing, Y.F. and Neves, A.M.A., 2016. Analysis of composite plates using a layerwise theory and a differential quadrature finite element method. *Composite Structures*, *156*, pp.393-398.

Librescu, L. and Reddy, J.N., 1986, September. A critical review and generalization of transverse shear deformable anisotropic plates. In *Euromech colloquium* (Vol. 219, pp. 32-43).

Mindlin, R. D. (1951). Influence of Rotary Inertia and Shear on Flexural Motions of Isotropic Elastic Plates. *Journal of Applied Mechanics*, 18, pp. 31-8.

Mackerle, J., 2002. Finite element analyses of sandwich structures: a bibliography (1980–2001). *Engineering Computations*.

Manbachi, A. and Cobbold, R.S., 2011. Development and application of piezoelectric materials for ultrasound generation and detection. *Ultrasound*, *19*(4), pp.187-196.

Mallik, N. and Ray, M.C., 2003. Effective coefficients of piezoelectric fiber-reinforced composites. *AIAA journal*, *41*(4), pp.704-710.

Mallik, N. and Ray, M.C., 2004. Exact solutions for the analysis of piezoelectric fiber reinforced composites as distributed actuators for smart composite plates. *International Journal of Mechanics and Materials in Design*, *1*(4), pp.347-364.

Meunier, M. and Shenoi, R.A., 1999. Free vibration analysis of composite sandwich plates. *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science*, *213*(7), pp.715-727.

Meiche, NE., Tounsi, A., Ziane, N. and Mechab, I., 2011. A new hyperbolic shear deformation theory for buckling and vibration of functionally graded sandwich plate. *International Journal of Mechanical Sciences*, *53*(4), pp.237-247.

Mantari, J.L., Oktem, A.S. and Soares, C.G., 2012a. A new higher order shear deformation theory for sandwich and composite laminated plates. *Composites Part B: Engineering*, *43*(3), pp.1489-1499.

Mantari, J.L., Oktem, A.S. and Soares, C.G., 2012b. A new trigonometric shear deformation theory for isotropic, laminated composite and sandwich plates. *International Journal of Solids and Structures*, *49*(1), pp.43-53.

Mantari, J.L., Oktem, A.S. and Soares, C.G., 2012c. A new trigonometric layerwise shear deformation theory for the finite element analysis of laminated composite and sandwich plates. *Computers & structures*, *94*, pp.45-53.

Mantari, J.L. and Soares, C.G., 2013. Generalized layerwise HSDT and finite element formulation for symmetric laminated and sandwich composite plates. *Composite Structures*, *105*, pp.319-331.

Mahi, A. and Tounsi, A., 2015. A new hyperbolic shear deformation theory for bending and free vibration analysis of isotropic, functionally graded, sandwich and laminated composite plates. *Applied Mathematical Modelling*, *39*(9), pp.2489-2508.

Moita, J.M.S., Correia, I.F., Soares, C.M.M. and Soares, C.A.M., 2004. Active control of adaptive laminated structures with bonded piezoelectric sensors and actuators. *Computers & Structures*, *82* (17-19), pp.1349-1358.

Moita, J.M.S., Soares, C.M.M. and Soares, C.A.M., 2005. Active control of forced vibrations in adaptive structures using a higher order model. *Composite structures*, *71*(3-4), pp.349-355.

Moita, J.S., Araújo, A.L., Martins, P., Soares, C.M. and Soares, C.M., 2011a. A finite element model for the analysis of viscoelastic sandwich structures. *Computers & structures*, *89*(21-22), pp.1874-1881.

Moita, J.S., Araújo, A.L., Martins, P.G., Soares, C.M.M. and Soares, C.A.M., 2011b. Analysis of active-passive plate structures using a simple and efficient finite element model. *Mechanics of Advanced Materials and Structures*, *18*(2), pp.159-169.

Mishra, B.B., Nath, J.K., Biswal, T. and Das, T., 2019. Transverse shear stress relaxed zigzag theory for cylindrical bending of laminated composite and piezoelectric panels. *Applied Mathematical Modelling*, *71*, pp.584-600.

Murakami, H., 1986. Laminated composite plate theory with improved in-plane responses. *Journal of Applied Mechanics*, *53*, pp.661-666.

Moleiro, F., Carrera, E., Zappino, E., Li, G. and Cinefra, M., 2020. Layerwise mixed elements with node-dependent kinematics for global–local stress analysis of multilayered plates using high-order Legendre expansions. *Computer Methods in Applied Mechanics and Engineering*, *359*, p.112764.

Natarajan, S., Baiz, P.M., Bordas, S., Rabczuk, T. and Kerfriden, P., 2011. Natural frequencies of cracked functionally graded material plates by the extended finite element method. *Composite structures*, *93*(11), pp.3082-3092.

Natarajan, S., Ferreira, A.J.M. and Nguyen-Xuan, H., 2014a. Analysis of cross-ply laminated plates using isogeometric analysis and unified formulation. *Curved and Layered Structures*, *1*(1).

Natarajan, S., Haboussi, M. and Manickam, G., 2014b. Application of higher-order structural theory to bending and free vibration analysis of sandwich plates with CNT reinforced composite facesheets. *Composite Structures*, *113*, pp.197-207.

Natarajan, S. and Manickam, G., 2012a. Bending and vibration of functionally graded material sandwich plates using an accurate theory. *Finite Elements in Analysis and Design*, *57*, pp.32-42.

Natarajan, S., Chakraborty, S., Thangavel, M., Bordas, S. and Rabczuk, T., 2012b. Size-dependent free flexural vibration behavior of functionally graded nanoplates. *Computational Materials Science*, *65*, pp.74-80.

Natarajan, S. and Song, C., 2013. Representation of singular fields without asymptotic enrichment in the extended finite element method. *International Journal for Numerical Methods in Engineering*, *96*(13), pp.813-841.

Natarajan, S., Ooi, E.T., Chiong, I. and Song, C., 2014c. Convergence and accuracy of displacement based finite element formulations over arbitrary polygons: Laplace interpolants, strain smoothing and scaled boundary polygon formulation. *Finite Elements in Analysis and Design*, *85*, pp.101-122.

Natarajan, S., Wang, J., Song, C. and Birk, C., 2015. Isogeometric analysis enhanced by the scaled boundary finite element method. *Computer Methods in Applied Mechanics and Engineering*, *283*, pp.733-762.

Naji, J., Zabihollah, A. and Behzad, M., 2016. Layerwise theory in modeling of magnetorheological laminated beams and identification of magnetorheological fluid. *Mechanics Research Communications*, *77*, pp.50-59.

Naji, J., Zabihollah, A. and Behzad, M., 2018. Vibration characteristics of laminated composite beams with magnetorheological layer using layerwise theory. *Mechanics of Advanced Materials and Structures*, *25*(3), pp.202-211.

Nosier, A., Kapania, R.K. and Reddy, J.N., 1993. Free vibration analysis of laminated plates using a layerwise theory. *AIAA journal*, *31*(12), pp.2335-2346.

Noor, A.K. and Burton, W.S., 1989. Assessment of shear deformation theories for multilayered composite plates. *Applied Mechanics Reviews*, *42*, pp. 1-13

Noor, A.K., 1973. Free vibrations of multilayered composite plates. *AIAA journal*, *11*(7), pp.1038-1039.

Nelson, R.B. and Lorch, D.R., 1974. A refined theory for laminated orthotropic plates. *Journal of Applied Mechanics*, *41*, pp.177-183.

Neves, A.M.A., Ferreira, A.J.M., Carrera, E., Roque, C.M.C., Cinefra, M., Jorge, R.M.N. and Soares, C.M.M., 2011. Bending of FGM plates by a sinusoidal plate formulation and collocation with radial basis functions. *Mechanics Research Communications*, *38*(5), pp.368-371.

Nath, J.K. and Kapuria, S., 2012. Assessment of improved zigzag and smeared theories for smart cross-ply composite cylindrical shells including transverse normal extensibility under thermoelectric loading. *Archive of Applied Mechanics*, *82*(7), pp.859-877.

Nath, J.K. and Kapuria, S., 2009. Improved smeared and zigzag third-order theories for piezoelectric angle-ply laminated cylindrical shells under electrothermomechanical loads. *Journal of Mechanics of Materials and Structures*, *4*(6), pp.1157-1184.

Nguyen, T.K., Nguyen, N.D., Vo, T.P. and Thai, H.T., 2017. Trigonometric-series solution for analysis of laminated composite beams. *Composite Structures*, *160*, pp.142-151.

Nguyen-Vinh, H., Bakar, I., Msekh, M.A., Song, J.H., Muthu, J., Zi, G., Le, P., Bordas, S.P.A., Simpson, R., Natarajan, S. and Lahmer, T., 2012. Extended finite element method for dynamic fracture of piezo-electric materials. *Engineering Fracture Mechanics*, *92*, pp.19-31.

Nasirmanesh, A. and Mohammadi, S., 2015. XFEM buckling analysis of cracked composite plates. *Composite Structures*, *131*, pp.333-343.

Oh, J. and Cho, M., 2004. A finite element based on cubic zig-zag plate theory for the prediction of thermo-electric-mechanical behaviors. *International Journal of Solids and Structures*, *41*(5-6), pp.1357-1375.

Oh, J. and Cho, M., 2007. Higher order zig-zag theory for smart composite shells under mechanical-thermo-electric loading. *International journal of solids and structures*, *44*(1), pp.100-127.

Punera, D. and Kant, T., 2017. Elastostatics of laminated and functionally graded sandwich cylindrical shells with two refined higher order models. *Composite Structures*, *182*, pp.505-523.

Plagianakos, T.S. and Saravanos, D.A., 2009. Higher-order layerwise laminate theory for the prediction of interlaminar shear stresses in thick composite and sandwich composite plates. *Composite Structures*, *87*(1), pp.23-35.

Pamar, J.D., Naik, B.B., Latha, O.H. and Ahmed, G.S., 2015. Experimental Investigation of Bi Directional Carbon Fiber Composite. *Materials Today: Proceedings*, *2*(4-5), pp.3008-3016.

Panda, H.S., Sahu, S.K. and Parhi, P.K., 2013. Hygrothermal effects on free vibration of delaminated woven fiber composite plates–Numerical and experimental results. *Composite Structures*, *96*, pp.502-513.

Pendhari, S.S., Kant, T., Desai, Y.M. and Subbaiah, C.V., 2012. Static solutions for functionally graded simply supported plates. *International Journal of Mechanics and Materials in Design*, *8*(1), pp.51-69.

Pendhari, S.S., Sawarkar, S. and Desai, Y.M., 2015. 2D semi-analytical solutions for single layer piezoelectric laminate subjected to electro-mechanical loading. *Composite Structures*, *120*, pp.326-333.

Pai, P.F., 1995. A new look at shear correction factors and warping functions of anisotropic laminates. *International Journal of Solids and Structures*, *32*(16), pp.2295-2313.

Pandya, B.N. and Kant, T., 1988. Finite element analysis of laminated composite plates using a higher-order displacement model. *Composites Science and Technology*, *32*(2), pp.137-155.

Pandya, B.N. and Kant, T., 1988. Higher-order shear deformable theories for flexure of sandwich plates—Finite element evaluations. *international Journal of Solids and Structures*, *24*(12), pp.1267-1286.

Pagano, N.J., 1970. Exact solutions for rectangular bidirectional composites and sandwich plates. *Journal of composite materials*, *4*(1), pp.20-34.

Pagano, N. and Hatfield, S.J., 1972. Elastic behavior of multilayered bidirectional composites. *AIAA journal*, *10*(7), pp.931-933.

Phan, N.D. and Reddy, J.N., 1985. Analysis of laminated composite plates using a higher-order shear deformation theory. *International Journal for Numerical Methods in Engineering*, *21*(12), pp.2201-2219.

Pandit, M.K., Sheikh, A.H. and Singh, B.N., 2008. An improved higher order zigzag theory for the static analysis of laminated sandwich plate with soft core. *Finite elements in analysis and design*, *44*(9-10), pp.602-610.

Pandit, M.K., Singh, B.N. and Sheikh, A.H., 2009. Stochastic perturbation-based finite element for deflection statistics of soft core sandwich plate with random material properties. *International Journal of Mechanical Sciences*, *51*(5), pp.363-371.

Pandit, M.K., Sheikh, A.H. and Singh, B.N., 2010a. Analysis of laminated sandwich plates based on an improved higher order zigzag theory. *Journal of Sandwich Structures & Materials*, *12*(3), pp.307-326.

Pandit, M.K., Singh, B.N. and Sheikh, A.H., 2010b. Vibration of sandwich plates with random material properties using improved higher-order zig-zag theory. *Mechanics of Advanced Materials and Structures*, *17*(7), pp.561-572.

Pandey, S. and Pradyumna, S., 2015. A new C0 higher-order layerwise finite element formulation for the analysis of laminated and sandwich plates. *Composite Structures*, *131*, pp.1-16.

Phung-Van, P., Tran, L.V., Ferreira, A.J.M., Nguyen-Xuan, H. and Abdel-Wahab, M., 2017. Nonlinear transient isogeometric analysis of smart piezoelectric functionally graded material plates based on generalized shear deformation theory under thermo-electro-mechanical loads. *Nonlinear dynamics*, *87*(2), pp.879-894.

Reissner, E. and Stavsky, Y., 1961. Bending and stretching of Certain types of Aeolotropic Elastic Plates. *Journal of Applied Mechanics 28*, pp.402-408

Reissner, E. (1944). On the Theory of Bending of Elastic Plates. *Journal of Mathematics and Physics*, 23, pp. 184-191.

Reissner, E. (1945). The Effect of Transverse Shear Deformation on the Bending of Elastic Plates. *Journal of Applied Mechanics*, 12, No. 2, pp. 69-77.

Ratim, S., Bonnia, N.N. and Surip, S.N., 2012, July. The effect of woven and non-woven fiber structure on mechanical properties polyester composite reinforced kenaf. In *AIP Conference Proceedings 2nd* (Vol. 1455, No. 1, pp. 131-135). American Institute of Physics.

Rath, M.K. and Sahu, S.K., 2012. Vibration of woven fiber laminated composite plates in hygrothermal environment. *Journal of vibration and control*, *18*(13), pp.1957-1970.

Ruys, A. and Sun, D., 2002. Functionally graded materials (FGM) and their production methods. *URL: http://www. azom. com/article. aspx*.

Rao, M.K. and Desai, Y.M., 2004. Analytical solutions for vibrations of laminated and sandwich plates using mixed theory. *Composite Structures*, *63*(3-4), pp.361-373.

Rao, M.K. and Desai, Y.M., 2004. Analytical solutions for vibrations of laminated and sandwich plates using mixed theory. *Composite Structures*, *63*(3-4), pp.361-373.

Ray, M.C., Bhattacharya, R. and Samanta, B., 1993. Exact solutions for static analysis of intelligent structures. *AIAA journal*, *31*(9), pp.1684-1691.

Ray, M.C., Bhattacharya, R. and Samanta, B., 1998. Exact solutions for dynamic analysis of composite plates with distributed piezoelectric layers. *Computers & structures*, *66*(6), pp.737-743.

Ray, M.C., Bhattacharyya, R. and Samanta, B., 1994. Static analysis of an intelligent structure by the finite element method. *Computers & structures*, *52*(4), pp.617-631.

Ray, M.C. and Sachade, H.M., 2006. Exact solutions for the functionally graded plates integrated with a layer of piezoelectric fiber-reinforced composite. *Journal of Applied Mechanics, 73*, pp. 622-632.

Ray, M.C. and Mallik, N., 2004. Finite element analysis of smart structures containing piezoelectric fiber-reinforced composite actuator. *AIAA journal*, *42*(7), pp.1398-1405.

Ray, M.C. and Sachade, H.M., 2006. Finite element analysis of smart functionally graded plates. *International Journal of Solids and Structures*, *43*(18-19), pp.5468-5484.

Ray, M.C., 2019. A novel smart hybrid-Trefftz finite element for smart laminated composite plates. *International Journal for Numerical Methods in Engineering*, *120*(6), pp.707-726.

Ray, M.C. and Dwibedi, S., 2020. Hybrid-Trefftz finite element model for antisymmetric laminated composite plates using a high order shear deformation theory. *International Journal of Mechanics and Materials in Design*, pp.1-21.

Reddy, J.N., 1982. On the solutions to forced motions of rectangular composite plates. *Journal of Applied Mechanics, 49*, pp. 403-408.

Reddy, J.N., 1984. A simple higher-order theory for laminated composite plates. *Journal of Applied Mechanics, 51*, pp.752-754.

Reddy, J.N., 1989. On the generalization of displacement-based laminate theories. *Applied Mechanics Reviews, 42*, pp. 213-222.

Reddy, J.N., Barbero, E.J. and Teply, J.L., 1989. A plate bending element based on a generalized laminate plate theory. *International journal for numerical methods in engineering*, *28*(10), pp.2275-2292.

Reddy, J.N. (2004). Mechnaics of Laminated Composite Plates and Shells: Theory and Analysis. CRC press, 2nd edition, New York.

Robbins, D.H. and Reddy, J.N., 1991. Analysis of piezoelectrically actuated beams using a layer-wise displacement theory. *Computers & structures*, *41*(2), pp.265-279.

Robbins Jr, D.H. and Reddy, J., 1993. Modelling of thick composites using a layerwise laminate theory. *International journal for numerical methods in engineering*, *36*(4), pp.655-677.

Rouzegar, J. and Abad, F., 2015. Analysis of cross-ply laminates with piezoelectric fiber-reinforced composite actuators using four-variable refined plate theory. *Journal of Theoretical and Applied Mechanics*, *53*(2), pp.439-452.

Rouzegar, J. and Abbasi, A., 2017. A refined finite element method for bending of smart functionally graded plates. *Thin-Walled Structures*, *120*, pp.386-396.

Rouzegar, J. and Abbasi, A., 2018. A refined finite element method for bending analysis of laminated plates integrated with piezoelectric fiber-reinforced composite actuators. *Acta Mechanica Sinica*, *34*(4), pp.689-705.

Rouzegar, J., Koohpeima, R. and Abad, F., 2019. Dynamic analysis of laminated composite plate integrated with a piezoelectric actuator using four-variable refined plate theory. *Iranian Journal of Science and Technology, Transactions of Mechanical Engineering*, pp.1-14.

Robaldo, A., Carrera, E. and Benjeddou, A., 2005. Unified formulation for finite element thermoelastic analysis of multilayered anisotropic composite plates. *Journal of Thermal Stresses*, *28*(10), pp.1031-1065.

Robaldo, A., Carrera, E. and Benjeddou, A., 2006. A unified formulation for finite element analysis of piezoelectric adaptive plates. *Computers & structures*, *84*(22-23), pp.1494-1505.

Rodrigues, J.D., Roque, C.M.C., Ferreira, A.J.M., Carrera, E. and Cinefra, M., 2011. Radial basis functions–finite differences collocation and a Unified Formulation for bending, vibration and buckling analysis of laminated plates, according to Murakami's zig-zag theory. *Composite Structures*, *93*(7), pp.1613-1620.

Rajkumar, S., Sivaraj, M., Rudrapati, R., Arulmurgan, B. and Muthuraman, S.201, 2018. Experimental and Finite-Element Analysis of Tee Joint's Stiffness Characteristics of A3003 Honeycomb Core Sandwich Panels. International Journal of Mechanics and Design, 4, pp.21-29.

Roque, C.M.C., Ferreira, A.J.M. and Jorge, R.M.N., 2005. Modelling of composite and sandwich plates by a trigonometric layerwise deformation theory and radial basis functions. *Composites Part B: Engineering*, *36*(8), pp.559-572.

Stravsky, Y., 1961. Bending and stretching of laminated aeolotropic plates. *Journal of the Engineering Mechanics Division*, *87*(6), pp.31-56.

Sarangi, S.K. and Basa, B., 2014. Nonlinear finite element analysis of smart laminated composite sandwich plates. *International Journal of Structural Stability and Dynamics*, *14*(03), p.1350075.

Sheikh, A.H., Topdar, P. and Halder, S., 2001. An appropriate FE model for through-thickness variation of displacement and potential in thin/moderately thick smart laminates. *Composite structures*, *51*(4), pp.401-409.

Sheikh, A.H. and Chakrabarti, A., 2003. A new plate bending element based on higher-order shear deformation theory for the analysis of composite plates. *Finite elements in analysis and design*, *39*(9), pp.883-903.

Singh, S.D. and Sahoo, R., 2020, December. Static and free vibration analysis of functionally graded CNT reinforced composite plates using trigonometric shear deformation theory. *Structures* 28, pp. 685-696.

Soni, A., Grover, N., Bhardwaj, G. and Singh, B.N., 2020. Non-polynomial framework for static analysis of functionally graded carbon nano-tube reinforced plates. *Composite Structures*, *233*, p.111569.

Singh, S.J. and Harsha, S.P., 2019. Exact solution for free vibration and buckling of sandwich S-FGM plates on pasternak elastic foundation with various boundary conditions. *International Journal of Structural Stability and Dynamics*, *19*(03), p.1950028.

Shariyat, M. and Alipour, M.M., 2013. A power series solution for vibration and complex modal stress analyses of variable thickness viscoelastic two-directional FGM circular plates on elastic foundations. *Applied Mathematical Modelling*, *37*(5), pp.3063-3076.

Shiyekar, S.M. and Kant, T., 2011. Higher order shear deformation effects on analysis of laminates with piezoelectric fibre reinforced composite actuators. *Composite structures*, *93*(12), pp.3252-3261.

Shiyekar, S.M. and Kant, T., 2010. An electromechanical higher order model for piezoelectric functionally graded plates. *International Journal of Mechanics and Materials in Design*, *6*(2), pp.163-174.

Samanta, B., Ray, M.C. and Bhattacharyya, R., 1996. Finite element model for active control of intelligent structures. *AIAA journal*, *34*(9), pp.1885-1893.

Shivakumar, J. and Ray, M.C., 2008. Nonlinear analysis of smart cross-ply composite plates integrated with a distributed piezoelectric fiber reinforced composite actuator. *Mechanics of Advanced Materials and Structures*, *15*(1), pp.40-52.

Swaminathan, K. and Naveenkumar, D.T., 2014. Higher order refined computational models for the stability analysis of FGM plates–analytical solutions. *European Journal of Mechanics-A/Solids*, *47*, pp.349-361.

Singh, S.J. and Harsha, S.P., 2019. Buckling analysis of FGM plates under uniform, linear and non-linear in-plane loading. *Journal of Mechanical Science and Technology*, *33*(4), pp.1761-1767.

Sigmund, O., Torquato, S. and Aksay, I.A., 1998. On the design of 1–3 piezocomposites using topology optimization. *Journal of materials research*, *13*(4), pp.1038-1048.

Smith, W.A. and Auld, B.A., 1991. Modeling 1-3 composite piezoelectrics: thickness-mode oscillations. *IEEE transactions on ultrasonics, ferroelectrics, and frequency control*, *38*(1), pp.40-47.

Srinivas, S. and Rao, A.K., 1970. Bending, vibration and buckling of simply supported thick orthotropic rectangular plates and laminates. *International Journal of Solids and Structures*, *6*(11), pp.1463-1481.

Srinivas, S., 1973. A refined analysis of composite laminates. *Journal of Sound and Vibration*, *30*(4), pp.495-507.

Srinivas, S. and Rao, A.K., 1973. Flexure of thick rectangular plates. *Journal of Applied Mechanics, 40*, pp. 298-299.

Sawarkar, S., Pendhari, S. and Desai, Y., 2016. Semi-analytical solutions for static analysis of piezoelectric laminates. *Composite Structures*, *153*, pp.242-252.

Sawarkar, S., Pendhari, S., Desai, Y. and Kant, T., 2020. Electro-elastic analysis of simply supported functionally graded, laminated and sandwich piezoelectric plates. *International Journal for Computational Methods in Engineering Science and Mechanics*, *21*(6), pp.312-330.

Shimpi, R.P., 2002. Refined plate theory and its variants. *AIAA journal*, *40* (1), pp.137-146.

Shimpi, R.P. and Patel, H.G., 2006. A two variable refined plate theory for orthotropic plate analysis. *International Journal of Solids and Structures*, *43* (22-23), pp.6783-6799.

Singh, S.K., Chakrabarti, A.N.U.P.A.M., Bera, P. and Sony, J.S.D., 2011. An efficient C0 FE model for the analysis of composites and sandwich laminates with general layup. *Latin American Journal of solids and structures*, *8*(2), pp.197-212.

Soldatos, K.P., 1992. A transverse shear deformation theory for homogeneous monoclinic plates. *Acta Mechanica*, *94*(3), pp.195-220.

Sarangan, S. and Singh, B.N., 2018. Flexural analysis of laminated plates based on trigonometric layerwise shear deformation theory. *Mechanics of Advanced Materials and Structures*, *25*(15-16), pp.1351-1360.

Saravanos, D.A. and Heyliger, P.R., 1995. Coupled layerwise analysis of composite beams with embedded piezoelectric sensors and actuators. *Journal of Intelligent Material Systems and Structures*, *6*(3), pp.350-363.

Saravanos, D.A., Heyliger, P.R. and Hopkins, D.A., 1997. Layerwise mechanics and finite element for the dynamic analysis of piezoelectric composite plates. *International Journal of Solids and Structures*, *34*(3), pp.359-378.

Sahoo, R. and Singh, B.N., 2013. A new inverse hyperbolic zigzag theory for the static analysis of laminated composite and sandwich plates. *Composite structures*, *105*, pp.385-397.

Sahoo, R. and Singh, B.N., 2014. A new trigonometric zigzag theory for static analysis of laminated composite and sandwich plates. *Aerospace science and technology*, *35*, pp.15-28.

Song, C., 2009. The scaled boundary finite element method in structural dynamics. *International Journal for Numerical Methods in Engineering*, *77*(8), pp.1139-1171.

Sharma, P. and Parashar, S.K., 2016. Free vibration analysis of shear-induced flexural vibration of FGPM annular plate using generalized differential quadrature method. *Composite Structures*, *155*, pp.213-222.

Swain, P.K., Maiti, D.K. and Singh, B.N., 2020. Passive flutter suppression of damaged smart laminated composite plate using active fiber composite layer. *Mechanics Based Design of Structures and Machines*, pp.1-20.

Setoodeh, A. and Azizi, A., 2015. Bending and free vibration analyses of rectangular laminated composite plates resting on elastic foundation using a refined shear deformation theory. *Iranian Journal of Materials Forming*, *2*(2), pp.1-13.

Shen, H.S., Zheng, J.J. and Huang, X.L., 2003. Dynamic response of shear deformable laminated plates under thermomechanical loading and resting on elastic foundations. *Composite Structures*, *60*(1), pp.57-66.

Topdar, P., Chakraborti, A. and Sheikh, A.H., 2004. An efficient hybrid plate model for analysis and control of smart sandwich laminates. *Computer Methods in Applied Mechanics and Engineering*, *193*(42-44), pp.4591-4610.

Topdar, P., Sheikh, A.H. and Dhang, N., 2006. Response and control of smart laminates using a refined hybrid plate model. *AIAA journal*, *44*(11), pp.2636-2644.

Topdar, P., Sheikh, A.H. and Dhang, N., 2007. Vibration characteristics of composite/sandwich laminates with piezoelectric layers using a refined hybrid plate model. *International Journal of Mechanical Sciences*, *49*(11), pp.1193-1203.

Touratier, M., 1991. An efficient standard plate theory. *International journal of engineering science*, *29*(8), pp.901-916.

Tessler, A., Di Sciuva, M. and Gherlone, M., 2010. A consistent refinement of first-order shear deformation theory for laminated composite and sandwich plates using improved zigzag kinematics. *Journal of Mechanics of Materials and Structures*, *5*(2), pp.341-367.

Talha, M. and Singh, B.N., 2010. Static response and free vibration analysis of FGM plates using higher order shear deformation theory. *Applied Mathematical Modelling*, *34*(12), pp.3991-4011.

Thai, C.H., Nguyen-Xuan, H., Bordas, S.P.A., Nguyen-Thanh, N. and Rabczuk, T., 2015. Isogeometric analysis of laminated composite plates using the higher-order shear deformation theory. *Mechanics of Advanced Materials and Structures*, *22*(6), pp.451-469.

Tanahashi, H., 2007. Pasternak model formulation of elastic displacements in the case of a rigid circular foundation. *Journal of Asian Architecture and Building Engineering*, *6*(1), pp.167-173.

Whitney, J.M., 1973. Shear correction factors for orthotropic laminates under static load. *Journal of Applied Mechanics*, *40*, pp.302-304.

Wang, B.T. and Rogers, C.A., 1991. Laminate plate theory for spatially distributed induced strain actuators. *Journal of Composite Materials*, *25*(4), pp.433-452.

Wang, W., Li, S., Yao, L.Q. and Yi, S.C., 2019. Pseudo-three-dimensional analysis for functionally graded plate integrated with a piezoelectric fiber reinforced composite layer. *Mathematical Problems in Engineering*, *2019*, pp.1-14.

Wang, S.Y., Quek, S.T. and Ang, K.K., 2001. Vibration control of smart piezoelectric composite plates. *Smart materials and Structures*, *10*(4), p.637.

Xiang, S., Wang, K.M., Ai, Y.T., Sha, Y.D. and Shi, H., 2009. Analysis of isotropic, sandwich and laminated plates by a meshless method and various shear deformation theories. *Composite Structures*, *91*(1), pp.31-37.

Ye, L. and Daghyani, H.R., 1997. Characteristics of woven fibre fabric reinforced composites in forming process. *Composites Part A: Applied Science and Manufacturing*, *28*(9-10), pp.869-874.

Yang, P.C., Norris, C.H. and Stavsky, Y., 1966. Elastic wave propagation in heterogeneous plates. *International Journal of solids and structures*, *2*(4), pp.665-684.

Whitney, J.M. and Pagano, N.J., 1970. Shear deformation in heterogeneous anisotropic plates. *Journal of Applied Mechanics 37*(4), pp.1031-36

Zenkour, A.M., 2010. Hygro-thermo-mechanical effects on FGM plates resting on elastic foundations. *Composite Structures*, *93*(1), pp.234-238.

Zenkour, A.M. and Alghanmi, R.A., 2019a. Stress analysis of a functionally graded plate integrated with piezoelectric faces via a four-unknown shear deformation theory. *Results in Physics*, *12*, pp.268-277.

Zenkour, A.M. and Alghanmi, R.A., 2019b. Bending of exponentially graded plates integrated with piezoelectric fiber-reinforced composite actuators resting on elastic foundations. *European Journal of Mechanics-A/Solids*, *75*, pp.461-471.

Zenkour, A.M. and Alghanmi, R.A., 2021. Hygro-thermo-electro-mechanical bending analysis of sandwich plates with FG core and piezoelectric faces. *Mechanics of Advanced Materials and Structures*, *28*(3), pp.282-294.

Zenkour, A.M. and Hafed, Z.S., 2020. Bending analysis of functionally graded piezoelectric plates via quasi-3D trigonometric theory. *Mechanics of Advanced Materials and Structures*, *27*(18), pp.1551-1562.

Zenkour, A.M. and El-Shahrany, H.D., 2020. Vibration suppression of advanced plates embedded magnetostrictive layers via various theories. *Journal of Materials Research and Technology*, *9*(3), pp.4727-4748.

Zabihollah, A., Sedagahti, R. and Ganesan, R., 2007. Active vibration suppression of smart laminated beams using layerwise theory and an optimal control strategy. *Smart Materials and structures*, *16*(6), p.2190.

Zhen, W., Wanji, C. and Xiaohui, R., 2010. An accurate higher-order theory and C^0 finite element for free vibration analysis of laminated composite and sandwich plates. *Composite Structures*, *92*(6), pp.1299-1307.

Appendix A

Elements of the stiffness matrix

$$\overline{K}_{11} = A_{11}\alpha^2 + A_{66}\beta^2$$
$$\overline{K}_{12} = (A_{12} + A_{66})\alpha\beta$$
$$\overline{K}_{13} = -(B_{11}\alpha^3 + B_{12}\alpha\beta^2 + 2B_{66}\alpha\beta^2)$$
$$\overline{K}_{14} = \Omega_1 B_{11}\alpha^2 + C_{11}\alpha^2 + \Omega_1 B_{66}\beta^2 + C_{66}\beta^2$$
$$\overline{K}_{15} = (\Omega_2 B_{12} + D_{12} + \Omega_2 B_{66} + D_{66})\alpha\beta$$

$$\overline{K}_{21} = (A_{12} + A_{66})\alpha\beta$$
$$\overline{K}_{22} = A_{66}\alpha^2 + A_{22}\beta^2$$
$$\overline{K}_{23} = -(B_{22}\beta^3 + B_{12}\alpha^2\beta + 2B_{66}\alpha^2\beta)$$
$$\overline{K}_{24} = (\Omega_1 B_{66} + C_{66} + \Omega_1 B_{12} + C_{12})\alpha\beta$$
$$\overline{K}_{25} = \Omega_2 B_{22}\beta^2 + D_{22}\beta^2 + \Omega_2 B_{66}\alpha^2 + D_{66}\alpha^2$$

$$\overline{K}_{31} = -(B_{11}\alpha^3 + B_{12}\alpha\beta^2 + 2B_{66}\alpha\beta^2)$$
$$\overline{K}_{32} = -(B_{22}\beta^3 + B_{12}\alpha^2\beta + 2B_{66}\alpha^2\beta)$$
$$\overline{K}_{33} = G_{11}\alpha^4 + 2G_{12}\alpha^2\beta^2 + 4G_{66}\alpha^2\beta^2 + G_{22}\beta^4$$
$$\overline{K}_{34} = -\begin{pmatrix} \Omega_1 G_{11}\alpha^3 + H_{11}\alpha^3 + 2\Omega_1 G_{66}\alpha\beta^2 \\ +2H_{66}\alpha\beta^2 + \Omega_1 G_{12}\alpha\beta^2 + H_{12}\alpha\beta^2 \end{pmatrix}$$
$$\overline{K}_{35} = -\begin{pmatrix} \Omega_2 G_{12}\alpha^2\beta + I_{12}\alpha^2\beta + 2\Omega_2 G_{66}\alpha^2\beta \\ +2I_{66}\alpha^2\beta + \Omega_2 G_{22}\beta^3 + I_{22}\beta^3 \end{pmatrix}$$

$$\overline{K}_{41} = \Omega_1 B_{11}\alpha^2 + C_{11}\alpha^2 + \Omega_1 B_{66}\beta^2 + C_{66}\beta^2$$
$$\overline{K}_{42} = (\Omega_1 B_{66} + C_{66} + \Omega_1 B_{12} + C_{12})\alpha\beta$$
$$\overline{K}_{43} = -\begin{pmatrix} \Omega_1 G_{11}\alpha^3 + H_{11}\alpha^3 + 2\Omega_1 G_{66}\alpha\beta^2 \\ +2H_{66}\alpha\beta^2 + \Omega_1 G_{12}\alpha\beta^2 + H_{12}\alpha\beta^2 \end{pmatrix}$$
$$\overline{K}_{44} = \begin{pmatrix} {\Omega_1}^2 G_{11}\alpha^2 + 2\Omega_1 H_{11}\alpha^2 + L_{11}\alpha^2 \\ + {\Omega_1}^2 G_{66}\beta^2 + 2\Omega_1 H_{66}\beta^2 + L_{66}\beta^2 \\ + {\Omega_1}^2 AA_{22} + 2\Omega_1 FF_{22} + UU_{22} \end{pmatrix}$$
$$\overline{K}_{45} = \begin{pmatrix} \Omega_1\Omega_2 G_{12} + \Omega_1 I_{12} + \Omega_2 H_{12} + M_{12} \\ + \Omega_1\Omega_2 G_{66} + \Omega_1 I_{66} + \Omega_2 H_{66} + M_{66} \end{pmatrix}\alpha\beta$$

$$\overline{K}_{51} = (\Omega_2 B_{12} + D_{12} + \Omega_2 B_{66} + D_{66})\alpha\beta$$
$$\overline{K}_{52} = \Omega_2 B_{22}\beta^2 + D_{22}\beta^2 + \Omega_2 B_{66}\alpha^2 + D_{66}\alpha^2$$
$$\overline{K}_{53} = -\begin{pmatrix} \Omega_2 G_{12}\alpha^2\beta + I_{12}\alpha^2\beta + 2\Omega_2 G_{66}\alpha^2\beta \\ +2I_{66}\alpha^2\beta + \Omega_2 G_{22}\beta^3 + I_{22}\beta^3 \end{pmatrix}$$
$$\overline{K}_{54} = \begin{pmatrix} \Omega_1\Omega_2 G_{12} + \Omega_1 I_{12} + \Omega_2 H_{12} + M_{12} \\ + \Omega_1\Omega_2 G_{66} + \Omega_1 I_{66} + \Omega_2 H_{66} + M_{66} \end{pmatrix}\alpha\beta$$
$$\overline{K}_{55} = \begin{pmatrix} {\Omega_2}^2 G_{22}\beta^2 + 2\Omega_2 I_{22}\beta^2 + P_{22}\beta^2 \\ + {\Omega_2}^2 G_{66}\alpha^2 + 2\Omega_2 I_{66}\alpha^2 + P_{66}\alpha^2 \\ + {\Omega_2}^2 AA_{11} + 2\Omega_2 EE_{11} + SS_{11} \end{pmatrix}$$

$$[\overline{K}] = \begin{bmatrix} \overline{K}_{11} & \overline{K}_{12} & \overline{K}_{13} & \overline{K}_{14} & \overline{K}_{15} \\ \overline{K}_{21} & \overline{K}_{22} & \overline{K}_{23} & \overline{K}_{24} & \overline{K}_{25} \\ \overline{K}_{31} & \overline{K}_{32} & \overline{K}_{33} & \overline{K}_{34} & \overline{K}_{35} \\ \overline{K}_{41} & \overline{K}_{42} & \overline{K}_{43} & \overline{K}_{44} & \overline{K}_{45} \\ \overline{K}_{51} & \overline{K}_{52} & \overline{K}_{53} & \overline{K}_{54} & \overline{K}_{55} \end{bmatrix}$$

Appendix B

Elements of the mass matrix

$\bar{M}_{11} = \bar{I}_0$; $\bar{M}_{12} = 0$; $\bar{M}_{13} = -\bar{I}_1\alpha$; $\bar{M}_{14} = \bar{I}_3$; $\bar{M}_{15} = 0$;
$\bar{M}_{21} = 0$; $\bar{M}_{22} = \bar{I}_0$; $\bar{M}_{23} = -\bar{I}_1\beta$; $\bar{M}_{24} = 0$; $\bar{M}_{25} = \bar{I}_6$;
$\bar{M}_{31} = -\bar{I}_1\alpha$; $\bar{M}_{32} = -\bar{I}_1\beta$; $\bar{M}_{33} = \bar{I}_2(\alpha^2 + \beta^2) + \bar{I}_0$;
$\bar{M}_{34} = -\bar{I}_4\alpha$; $\bar{M}_{35} = -\bar{I}_7\beta$; $\bar{M}_{41} = \bar{I}_3$; $\bar{M}_{42} = 0$;
$\bar{M}_{43} = -\bar{I}_4\alpha$; $\bar{M}_{44} = \bar{I}_5$; $\bar{M}_{45} = 0$;
$\bar{M}_{51} = 0$; $\bar{M}_{52} = \bar{I}_6$; $\bar{M}_{53} = -\bar{I}_7\beta$; $\bar{M}_{54} = 0$; $\bar{M}_{55} = \bar{I}_8$

$$[M] = \begin{bmatrix} \bar{M}_{11} & \bar{M}_{12} & \bar{M}_{13} & \bar{M}_{14} & \bar{M}_{15} \\ \bar{M}_{21} & \bar{M}_{22} & \bar{M}_{23} & \bar{M}_{24} & \bar{M}_{25} \\ \bar{M}_{31} & \bar{M}_{32} & \bar{M}_{33} & \bar{M}_{34} & \bar{M}_{35} \\ \bar{M}_{41} & \bar{M}_{42} & \bar{M}_{43} & \bar{M}_{44} & \bar{M}_{45} \\ \bar{M}_{51} & \bar{M}_{52} & \bar{M}_{53} & \bar{M}_{54} & \bar{M}_{55} \end{bmatrix}$$

About the author

The author, Aniket Chanda, son of Shri Chandra Sekhar Chanda and Smt. Gopa Chanda, was born on 22nd June, 1992 at Navadwip, Nadia District, West Bengal. He graduated in Civil Engineering in the year 2015 from West Bengal University of Technology. Thereafter, he obtained his master's degree (M.Tech) in Civil Engineering in the year 2018 with a specialization in Structural Engineering from the Department of Civil Engineering, National Institute of Technology, Uttarakhand, India. In July 2018, he joined the Ph.D. program at Indian Institute of Technology (BHU), Varanasi in the Department of Civil Engineering, and this research wok is carried out during this period.

List of Publications from the Thesis

1. Chanda, A. and Sahoo, R., 2020. Accurate stress analysis of laminated composite and sandwich plates. *The Journal of Strain Analysis for Engineering Design*, 56(2), 96-111.

2. Chanda, A. and Sahoo, R., 2020. Analytical modeling of laminated composite plates integrated with piezoelectric layer using Trigonometric Zigzag theory. *Journal of Composite Materials*, *54*(29), pp.4691-4708.

3. Chanda, A. and Sahoo, R., 2020. Flexural Behavior of Functionally Graded Plates with Piezoelectric Materials. *Arabian Journal for Science and Engineering*, *45*(11), pp.9227-9248.

4. Chanda, A., Chandel, U., Sahoo, R. and Grover, N., 2020. Stress analysis of smart composite plate structures. *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science*, p.0954406220975449.

5. Chanda, A. and Sahoo, R., 2021. Static and dynamic responses of simply supported sandwich plates using non-polynomial zigzag theory. *Structures*, *29*, pp. 1911-1933.

6. Chanda, A. and Sahoo, R., 2021. Trigonometric zigzag theory for free vibration and transient responses of cross-ply laminated composite plates. *Mechanics of Materials*, *155*, p.103732.

7. Chanda, A. and Sahoo, R., 2021. Forced Vibration Responses of Smart Composite Plates using Trigonometric Zigzag Theory. *International Journal of Structural Stability and Dynamics*, p.2150067.

8. Sahoo, R. and Chanda, A., 2021. Transient analysis of smart composite laminate. *The Journal of Strain Analysis for Engineering Design*, *56*(4), pp.225-248.

9. Chanda A and Sahoo R., 2021. Finite Element Analysis of smart composite plate structures coupled with piezoelectric materials: Investigation of Static and Vibration responses. *Mechanics of Advanced Materials and Structures* (Accepted)

10. Chanda A and Sahoo R. A study on the Stress and Vibration characteristics of laminated composite plates resting on Elastic Foundations using Analytical and Finite Element solutions. (Under Review)

11. Chanda A and Sahoo R. Analytical and Finite Element Models for the Static and Dynamic Electro-Elastic Responses of Smart Laminated Composite Plates with Piezoelectric Materials supported on elastic foundations. (Under Review)