

Professor K. Swaminathan

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From: K. Swaminathan, D.T. Naveenkumar, Ashraf Zenkour and E. Carrera, "Stress, vibration and buckling analyses of FGM plates –A state-of-the-art review", Composite Structures, 02/2015, Vol. 120, pp 10-31, February 2015

See:

https://scholar.google.com/citations?user=Eh43w6UAAAAJ&hl=en

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## **Selected Publications:**

Kant, T. and Swaminathan, K., "Estimation of Transverse/Interlaminar Stresses in Laminated Composites-A Selective Review and Survey of Current Developments", Composite Structures, Vol. 49, 2000, pp. 65-75 T. Kant and K. Swaminathan, Analytical solutions using higher order refined theory for the stability analysis of laminated composite and sandwich plates, Struct. Eng. Mech. (4) (2000) 337-357.

Kant T, Swaminathan K. Analytical solutions for free vibration of laminated composite and sandwich plates based on a higher-order refined theory. Compos Struct 2001;53:73–85.

Kant, T. and Swaminathan, K., "Free vibration of isotropic, orthotropic, and multilayer plates based on higher order refined theories," Journal of Sound and Vibration, Vol. 241, 2001, pp. 319–327.

Kant, T., Swaminathan, K.: Analytical solutions for static analysis of laminated composite and sandwich plates based on a higher order refined theory. Compos. Struct. 31, 1–18 (2002)

Kant T., Swaminathan K.: Analytical solutions for the static analysis of laminated composite and sandwich plates based on a higher order refined theory. Compos. Struct. 56, 329–344 (2002)

Kant, T. and K. Swaminathan, 2004. Analytical solutions using a higher order refined theory for the stability analysis of laminated composite and sandwich plates. Struct. Eng. Mech., 64: 405-417.

Swaminathan K., Patil S.S., Nataraja M.S., Mahabaleswara K.S.: Bending of sandwich plates with antisymmetric angle-ply face sheets-Analytical evaluation of higher order refined computational models. Compos. Struct. 75, 114–120 (2006)

Swaminathan, K. and Patil, S. S., "Analytical solutions using higher order refined computational model with 12 degrees of freedom for the free vibration analysis of antisymmetric angle-ply plates," Composite Structures, 2007, doi: 10.1016/j.compstruct.2007.01.001.

- Swaminathan, K. and Patil, S. S. [2008] "Analytical solutions using a higher-order refined computational model with 12 degrees of freedom for the free vibration analysis of antisymmetric angle-ply plates," Composites Structures 82(2), 209–216.
- K. Swaminathan and Govind R. Sangwai, "Transverse Stresses in Antisymmetric Angle Ply Sandwich Plates Analytical Evaluation of Refined Higher Order Shear Deformation Theories", Advanced Materials Research, Vols. 123-125, 2010, pp. 599-602
- K. Swaminathan and D. T. Naveenkumar, "Higher order refined computational models for the stability of FGM plates Analytical solutions", European Journal of Mechanics A/Solids, Vol. 47, pp 349-361, September-October 2014
- K. Swaminathan, D.T. Naveenkumar, Ashraf Zenkour and E. Carrera, "Stress, vibration and buckling analyses of FGM plates –A state-of-the-art review", Composite Structures, 02/2015, Vol. 120, pp 10-31, February 2015 K. Swaminathan and D.M. Sangeetha, "Thermal analysis of FGM plates A critical review of various modeling techniques and solution methods", Composite Structures, Vol. 160, pp 43-60, January 2017