

## Active Control of Multiferroic Composite Shells Using 1-3 Piezoelectric Composites

**Authors :** S. C. Kattimani

**Abstract :** This article deals with the analysis of active constrained layer damping (ACLD) of smart multiferroic or magneto-electro-elastic doubly curved shells. The kinematics of deformations of the multiferroic doubly curved shell is described by a layer-wise shear deformation theory. A three-dimensional finite element model of multiferroic shells has been developed taking into account the electro-elastic and magneto-elastic couplings. A simple velocity feedback control law is employed to incorporate the active damping. Influence of layer stacking sequence and boundary conditions on the response of the multiferroic doubly curved shell has been studied. In addition, for the different orientation of the fibers of the constraining layer, the performance of the ACLD treatment has been studied.

**Keywords :** active constrained layer damping (ACLD), doubly curved shells, magneto-electro-elastic, multiferroic composite, smart structures

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