

An Investigation of the Electromechanical Coupling and Broadband Shunt Damping in Composite Plates with Integrated Piezo-Patches

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SUPPLEMENTARY INFORMATION

The design of experiments (DOE) method was implemented to find the optimum system parameters. A full factorial design, with three factors (i.e., the plate ply angle, the piezo-patch area and thickness ratios) is performed for all materials such that the design parameters and their coupled effects can be investigated. Figures S1-S4 demonstrate the 3D plots of the normalized electromechanical coupling as a function of the three design parameters for PZT-5A, PZT-5H, PMN-PT (30%PT) and PMN-PT(33%PT), respectively.

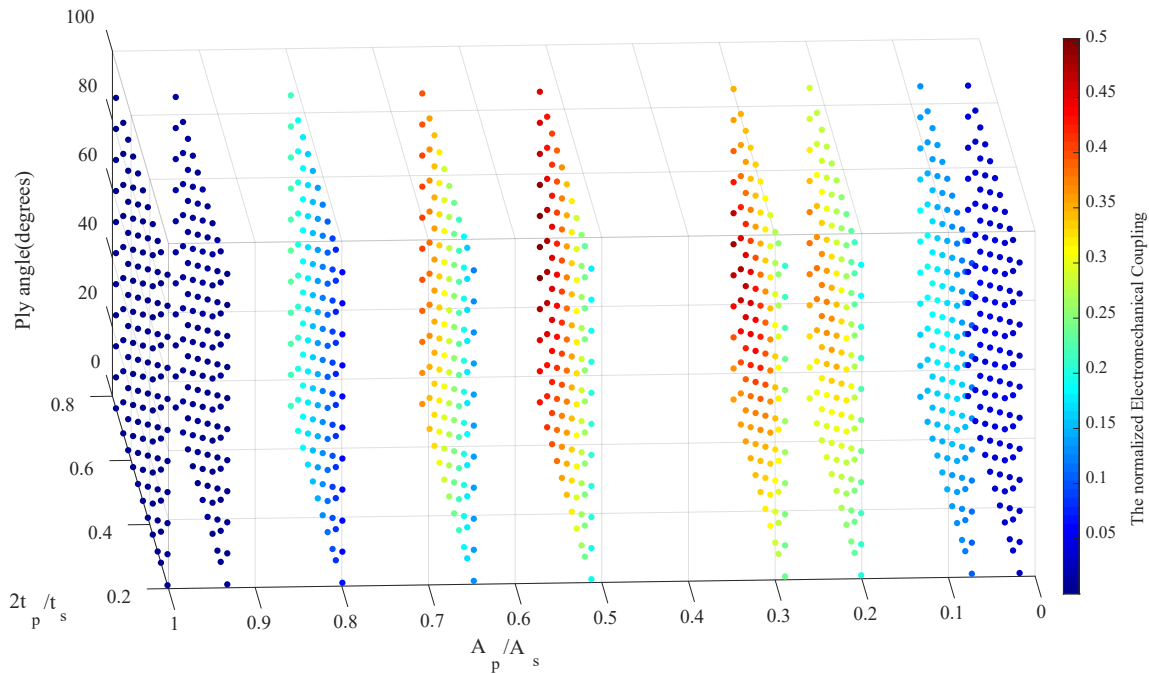


Figure S1. The normalized electromechanical coupling with respect to the piezo-patch area and thickness ratios and the plate ply angle for PZT-5A.

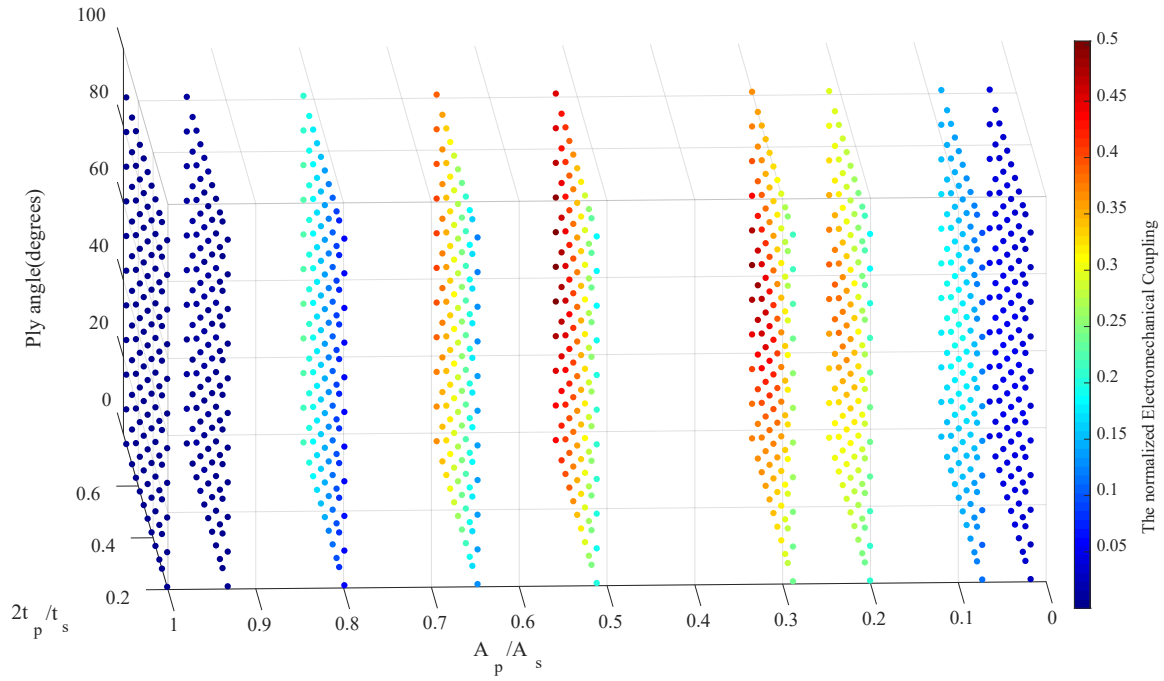


Figure S2. The normalized electromechanical coupling with respect to the piezo-patch area and thickness ratios and the plate ply angle for PZT-5H.

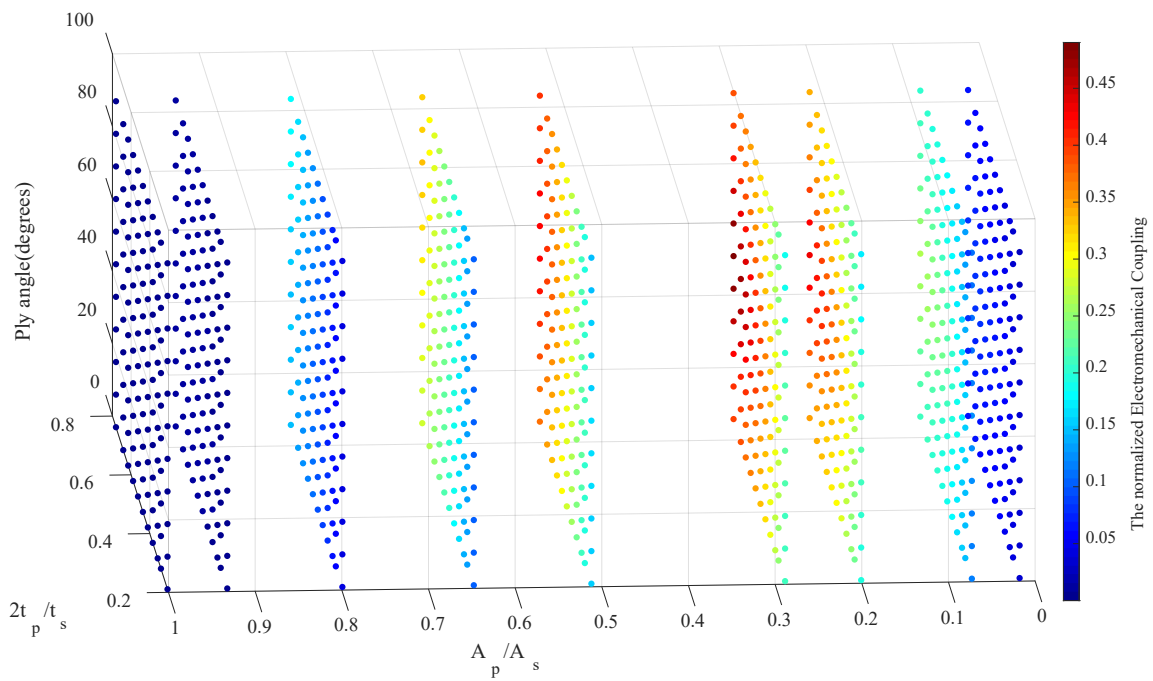


Figure S3. The normalized electromechanical coupling with respect to the piezo-patch area and thickness ratios and the plate ply angle for PMN-PT (30%PT).

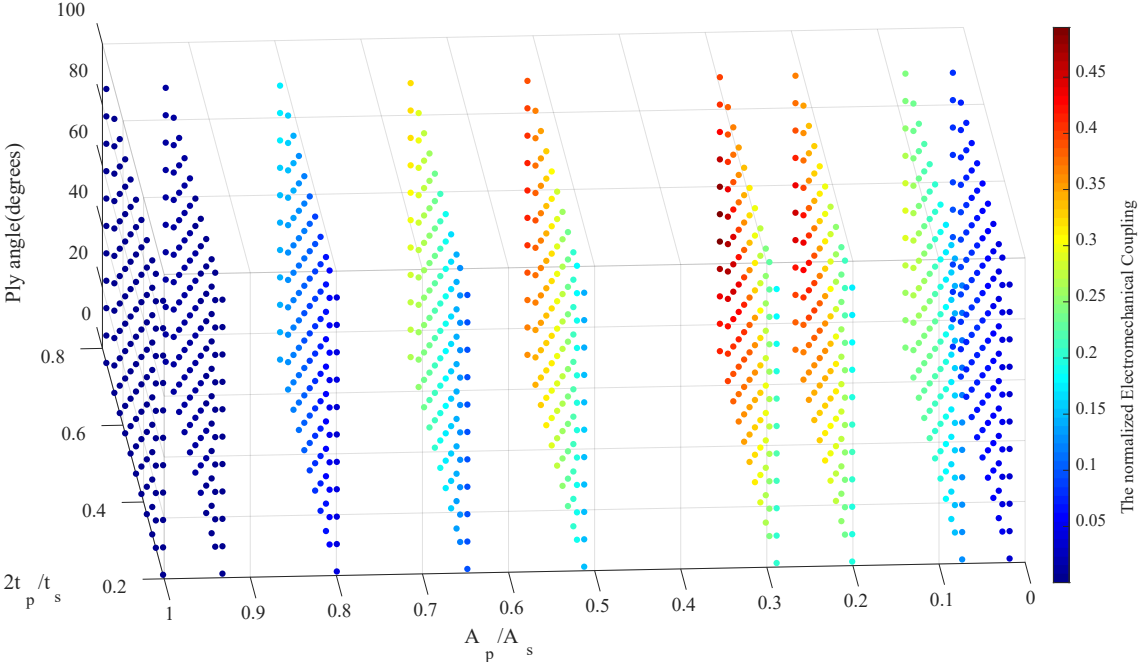


Figure S4. The normalized electromechanical coupling with respect to the piezo-patch area and thickness ratios and the plate ply angle for PMN-PT (33%PT).