

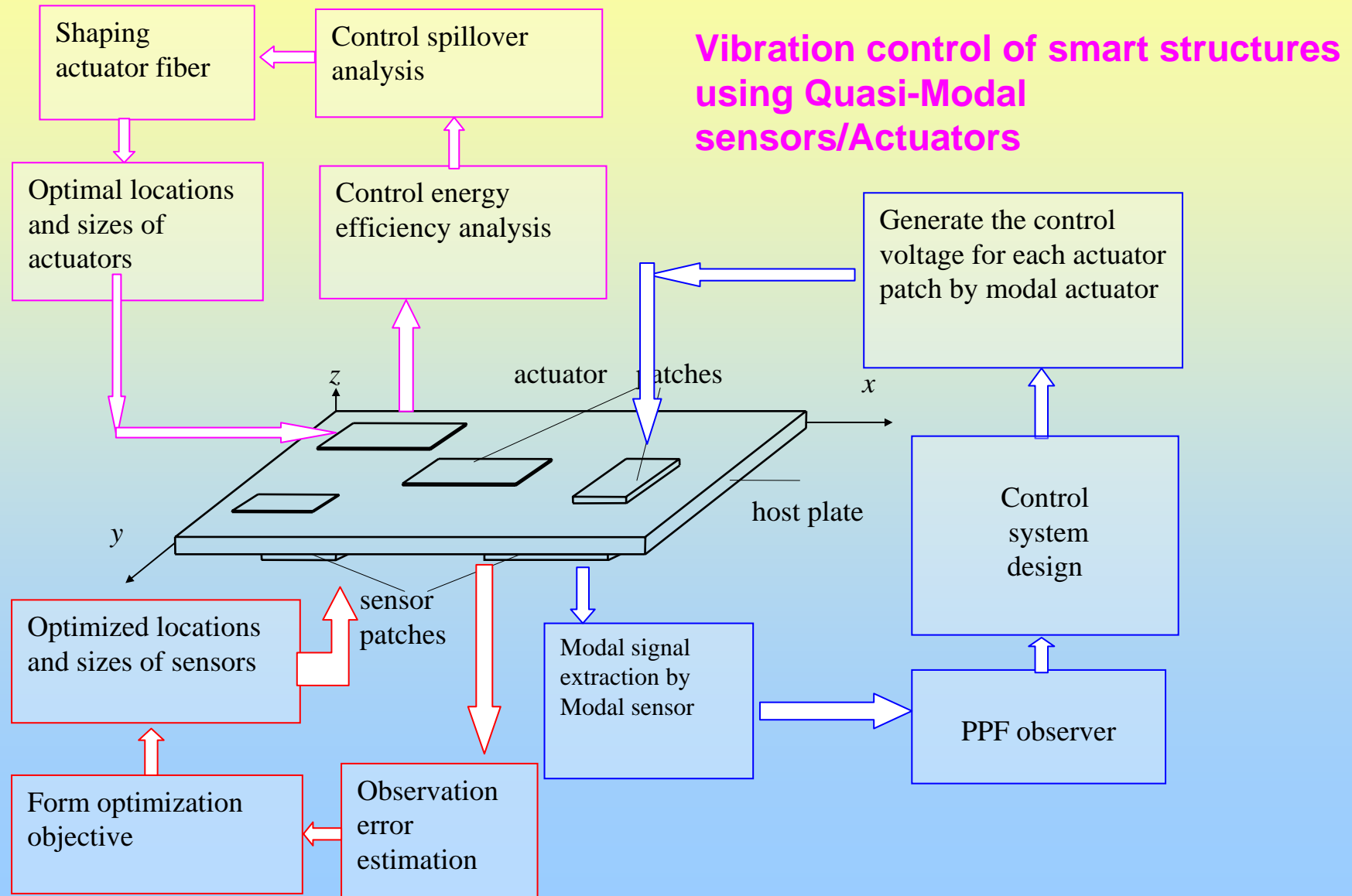
VIBRATION AND SHAPE CONTROL OF PIEZOELECTRIC SMART STRUCTURES

Investigators: Dr L. Tong, Dr D. Sun, Dr Q. Luo and Mr Q. Nguyen

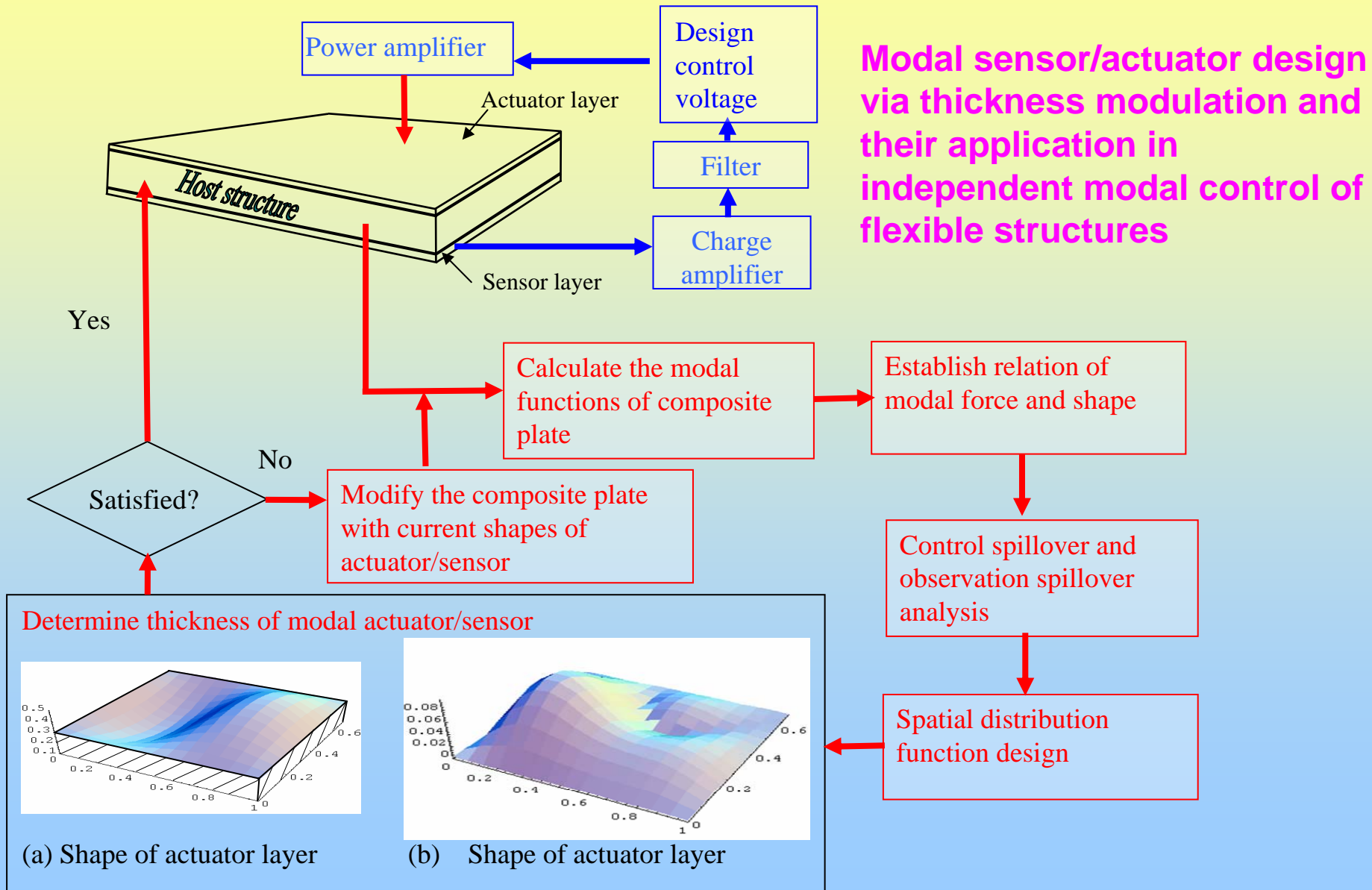
Sponsor: ARC (Grant No.:A89905990, A10009074, DP0210716)

- **Vibration control of piezoelectric fibre reinforced composite structures;**
- **Debonding tolerance of piezoelectric actuators and sensors in adaptive structures;**
- **Active shape control of large thin-walled structures using ferroelectric single crystals.**

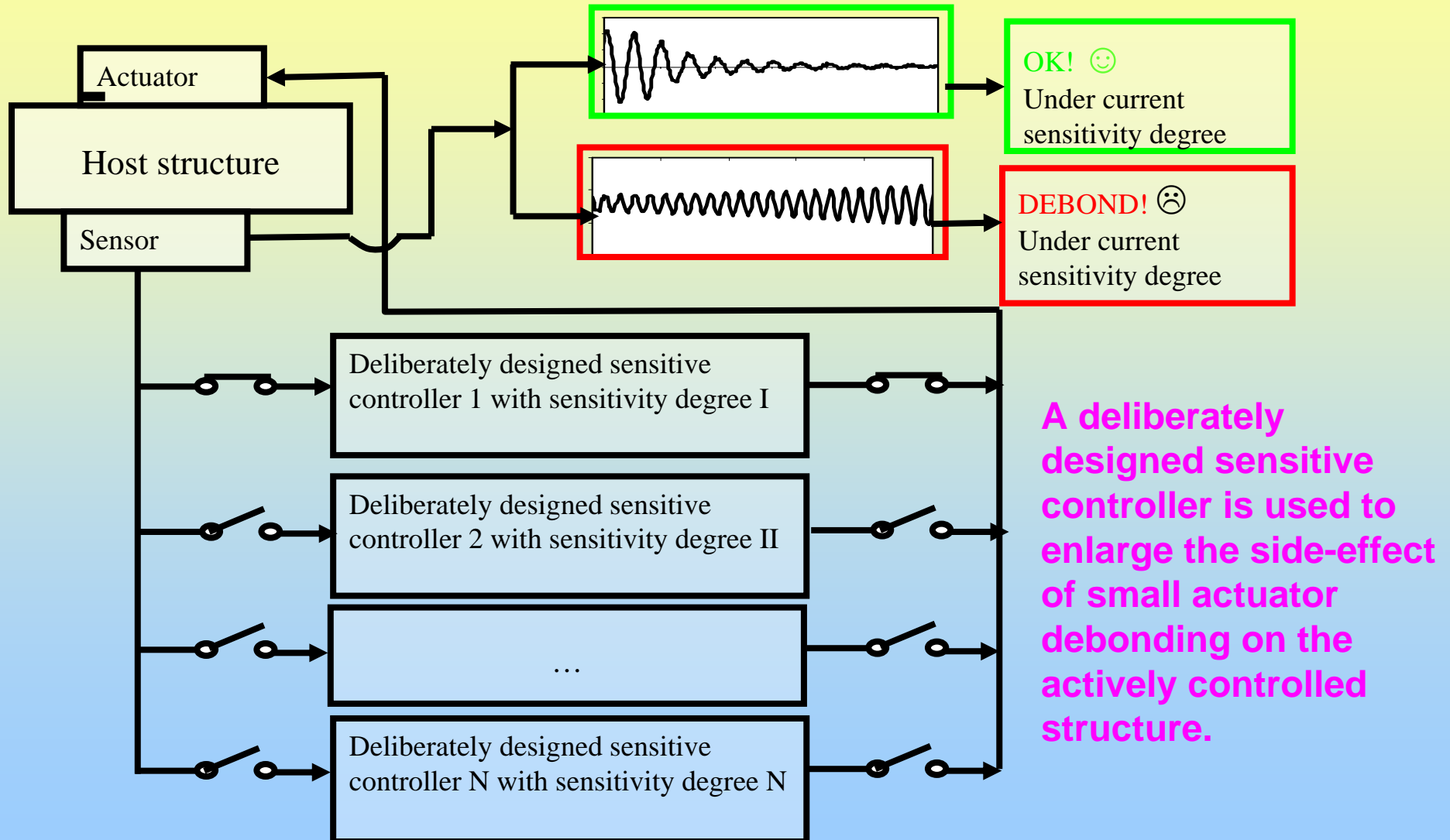
VIBRATION CONTROL OF PIEZOELECTRIC SMART STRUCTURES



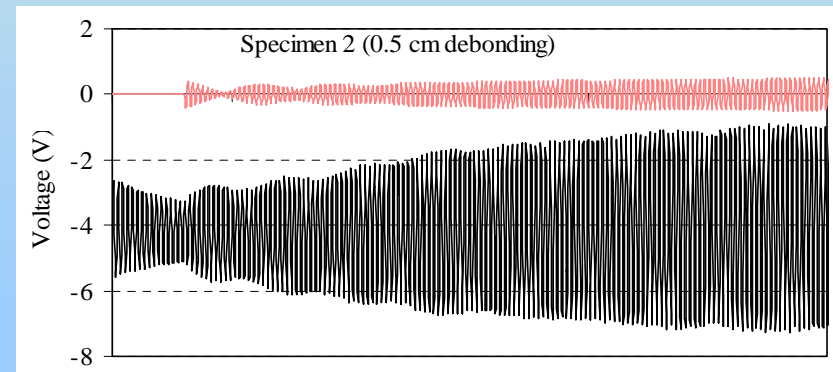
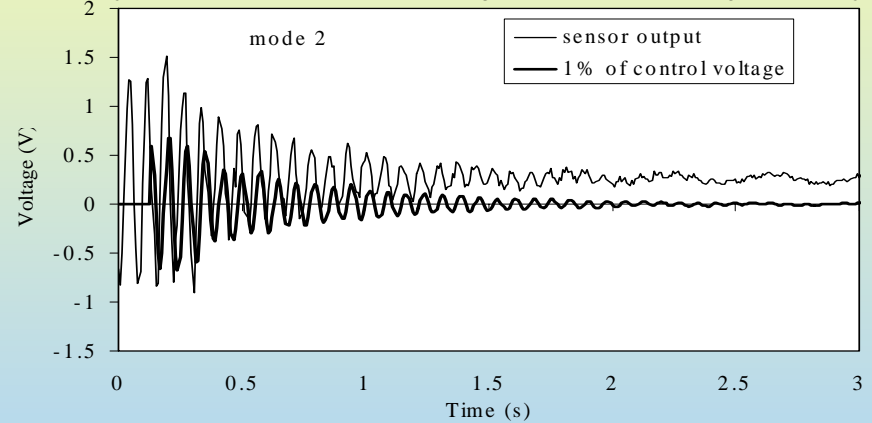
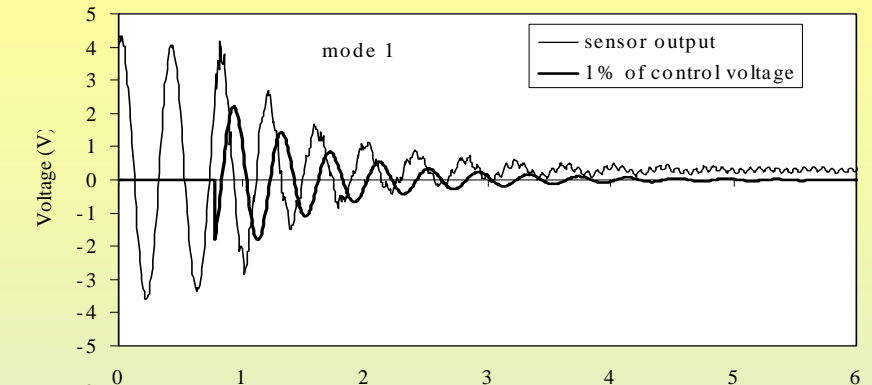
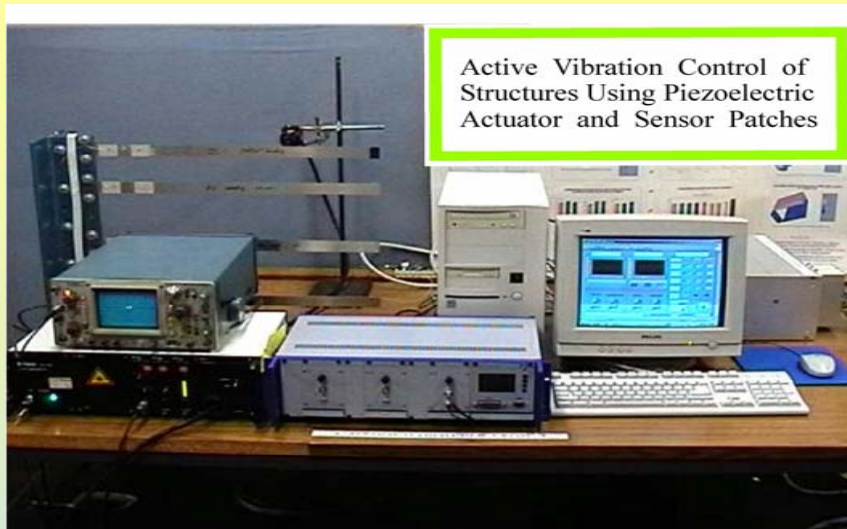
VIBRATION CONTROL USING MODAL PIEZOELECTRIC SENSORS AND ACUTORS



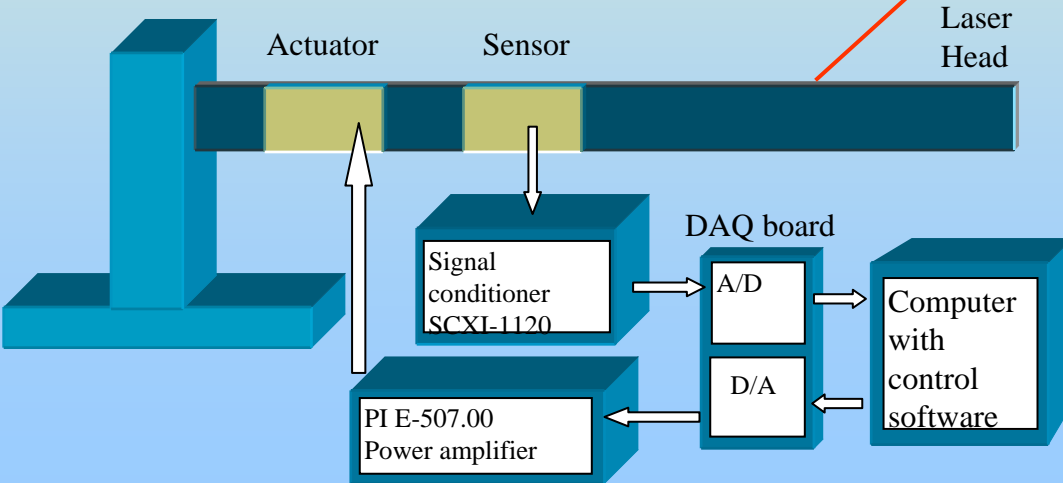
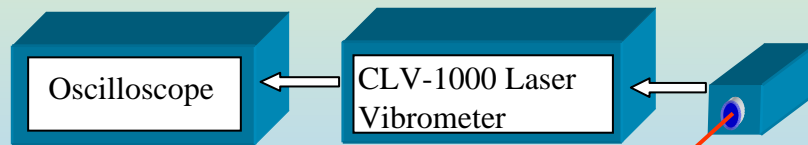
CLOSED-LOOP-CONTROL-BASED DEBONDING DETECTION OF PIEZOELECTRIC ACTUATORS



EXPERIMENTAL INVESTIGATION

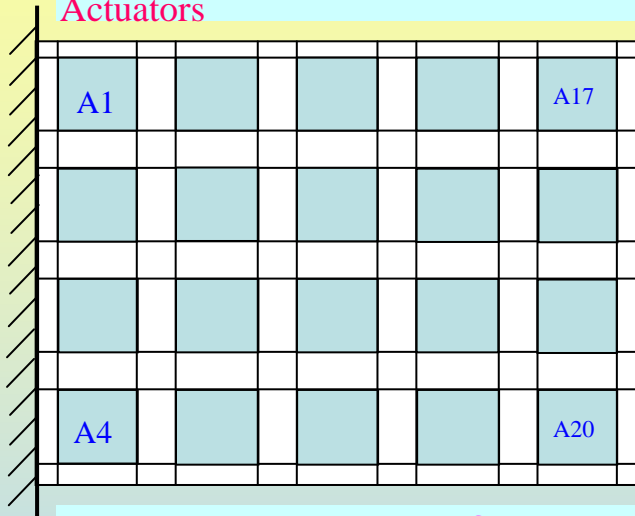


Active detection of small actuator

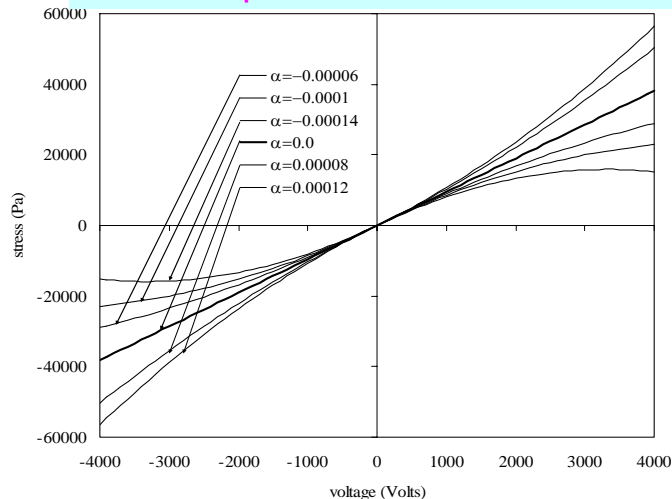


STATIC SHAPE CONTROL OF STRUCTURES WITH NONLINEAR PIEZOELECTRIC ACTUATORS

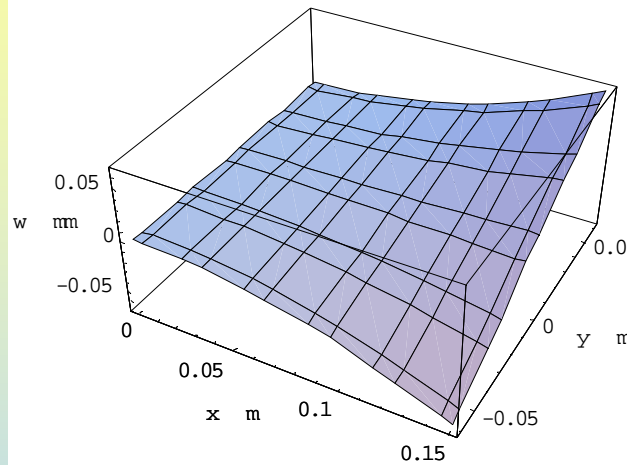
Plate with nonlinear piezoelectric Actuators



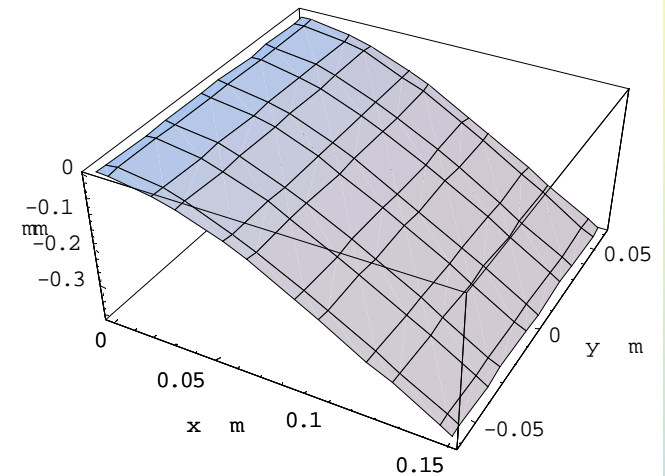
Nonlinear stress-electric field relationship



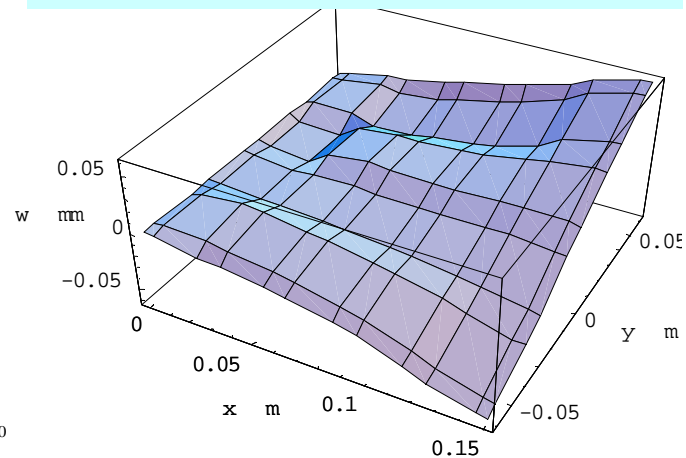
(a) Desired shape



(b) Uncontrolled natural shape



(c) Actuated shape by considering only transverse displacements



(d) Actuated shape by considering both displacements & slopes

