

Position Control of Piezoelectric Actuators by Thick-Film Piezoresistive Elements

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Piezoresistive Feedback

Precise control of actuator position can be achieved by using thick-film resistors (TFRs) for piezoresistive position feedback.

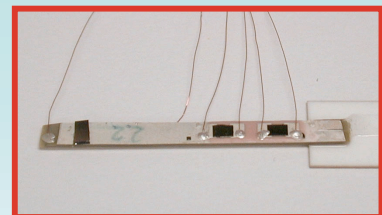
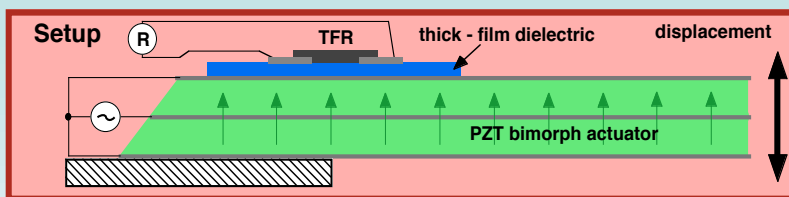
TFR structure

TFR conduction

TFR advantages

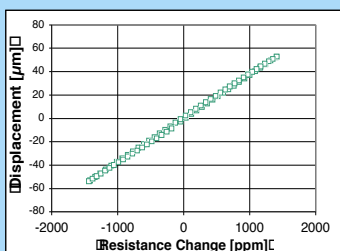
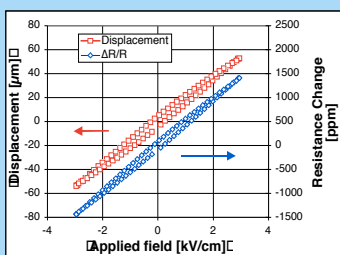
- Reliable (screen printing)
- Intimate contact
- Negligible creep
- Very stable

Piezoelectric Bimorph Actuator with TFR Element

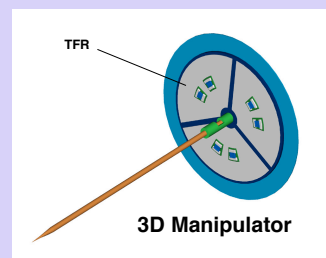
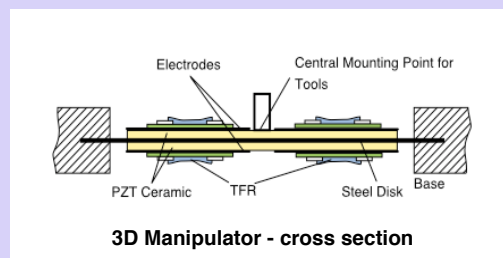


Results

TFR feedback strongly reduces the hysteresis associated with piezoelectric actuators.



Applications



This technology may be used in all actuators where hysteresis is unwanted, such as micromanipulators and stages for scanning microscopy.

Current work focuses on evaluating the final precision achievable through this materials system, as well as implementation on multilayer PZT actuators.

