



LSR



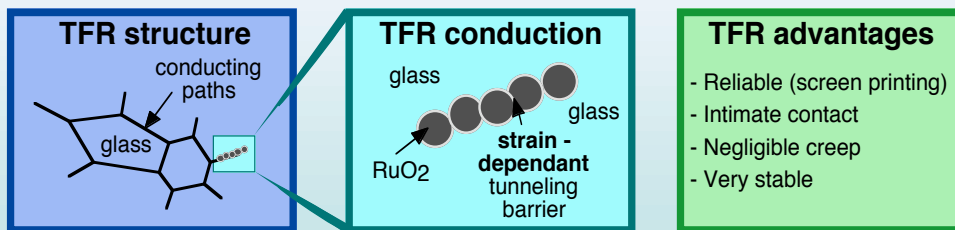
Position Control of Piezoelectric Actuators by Thick-Film Piezoresistive Elements

Thomas Maeder and Peter Ryser, Laboratoire de Production Microtechnique
Arvid Bergander and Jean-Marc Breguet, Laboratoire de Systèmes Robotiques
Takeshi Morita and Enrico Colla, Laboratoire de Céramique

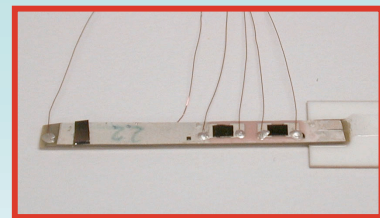
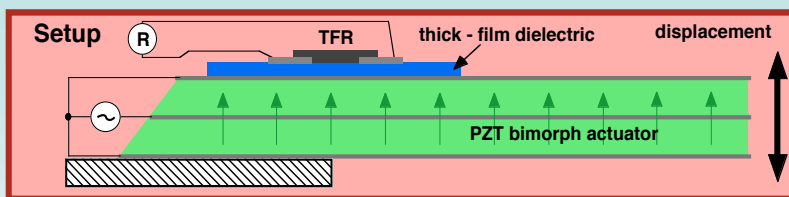
Ecole Polytechnique Fédérale de Lausanne, CH-1015 Lausanne

Piezoresistive Feedback

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

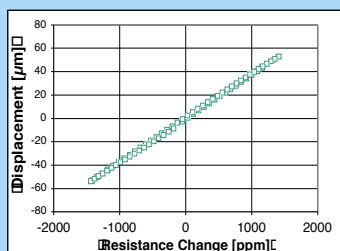
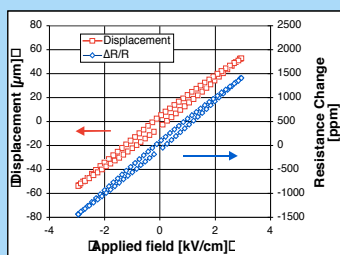


Piezoelectric Bimorph Actuator with TFR Element

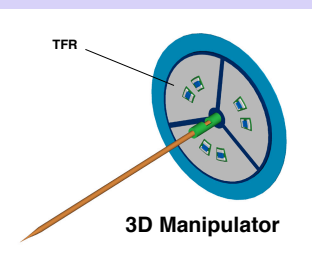
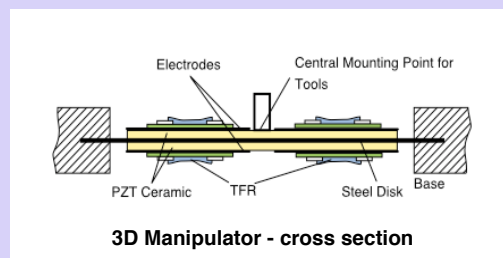


Results

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.

