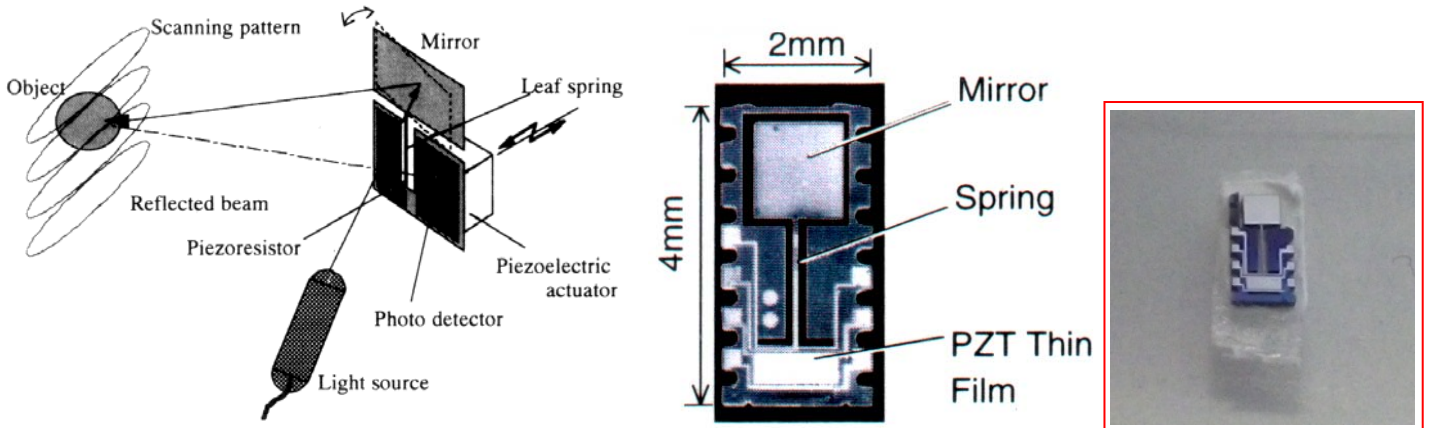
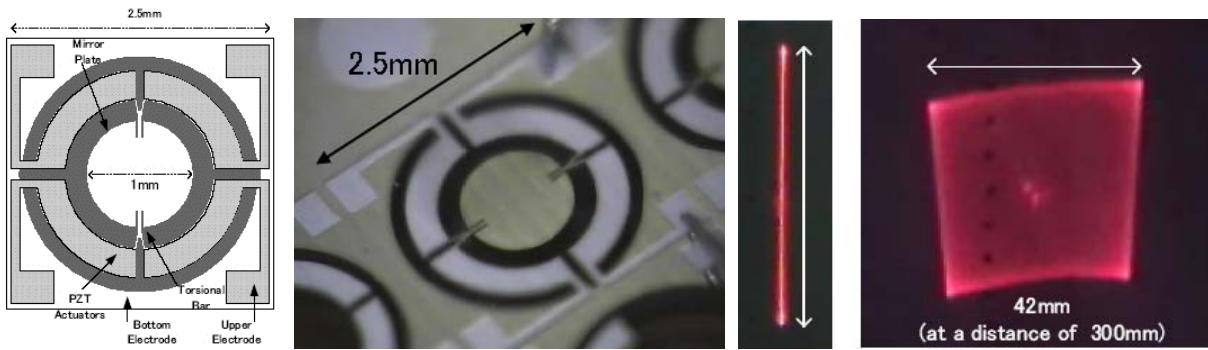


Electrostatic / Piezoelectric Optical Scanners



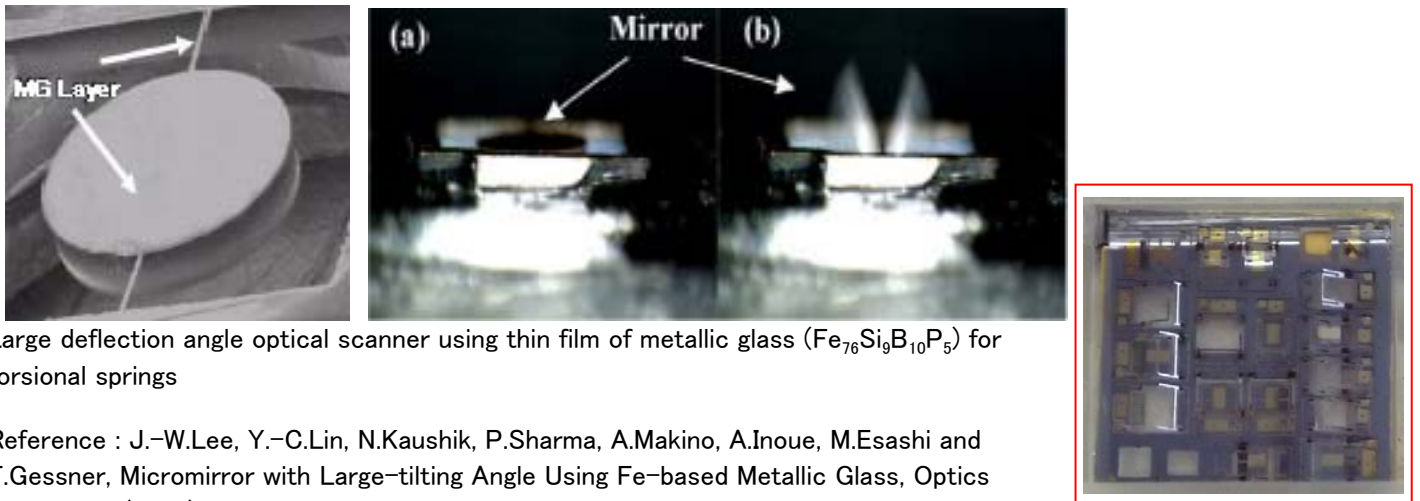
Piezoelectric 2 axis optical scanner (Omron)

Reference : T.Kawabata, M.Ikeda, H.Goto, M.Matsumoto and T.Yada, The 2-Dimensional Micro Scanner Integrated with PZT Thin Film Actuator, Transducers' 97 (1997) pp.339-342



2 axis optical scanner using piezoelectric thin film for laser projector

Reference : H.Matsuo, Y.Kawai and M.Esashi, Novel Design for Optical Scanner with Piezoelectric Film Deposited by Metal Organic Chemical Vapor Deposition, Jap. J. Appl. Phys., 49, 6 (2010) 04DL19



Large deflection angle optical scanner using thin film of metallic glass ($Fe_{76}Si_9B_{10}P_5$) for torsional springs

Reference : J.-W.Lee, Y.-C.Lin, N.Kaushik, P.Sharma, A.Makino, A.Inoue, M.Esashi and T.Gessner, Micromirror with Large-tilting Angle Using Fe-based Metallic Glass, Optics Letters, 36 (2011) pp.3464-3466

ポリイミドの熱収縮を利用してミラーを45° 立ち上げた構造



Electrostatic optical scanner for barcode reader (Tohoku Univ. - Optoelectronics)