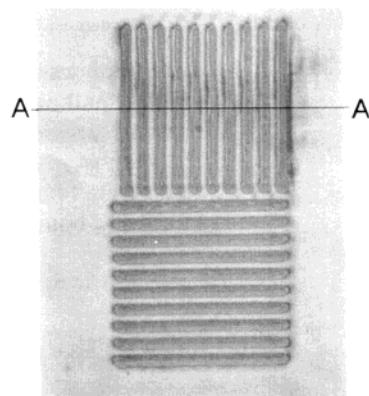
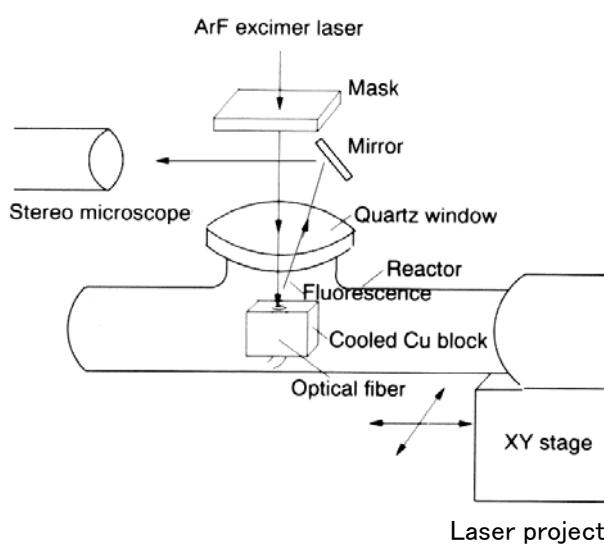
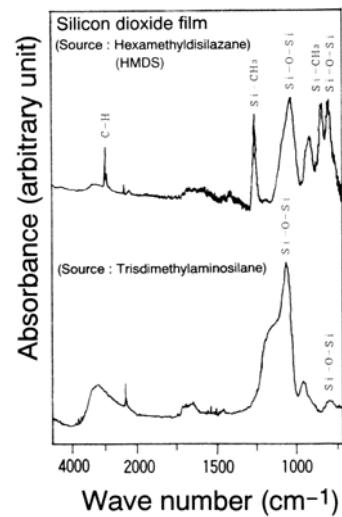


# Laser Processes and Stealth Dicing

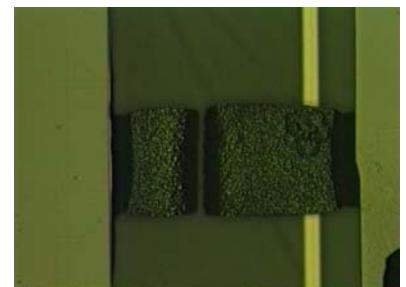
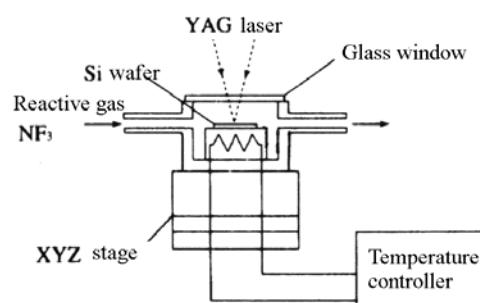
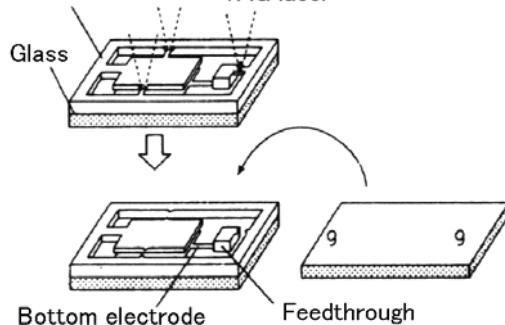


Pressure of HMDS : 470Pa  
Pressure of O<sub>2</sub> : 67Pa  
Substrate temp. : 2°C  
Laser irradiation time : 2min



Reference : K.Takashima, K.Minami, M.Esashi and J.Nishizawa, Laser Projection CVD Using the Low Temperature Condensation Method, Applied Surface Science, 79/80 (1994) pp.366–374

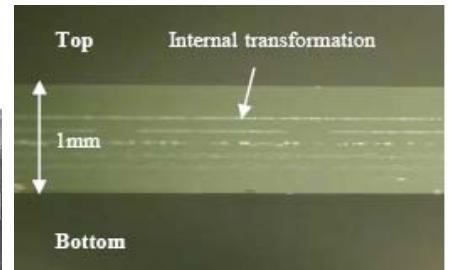
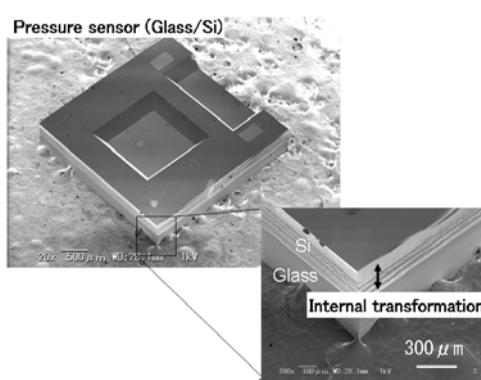
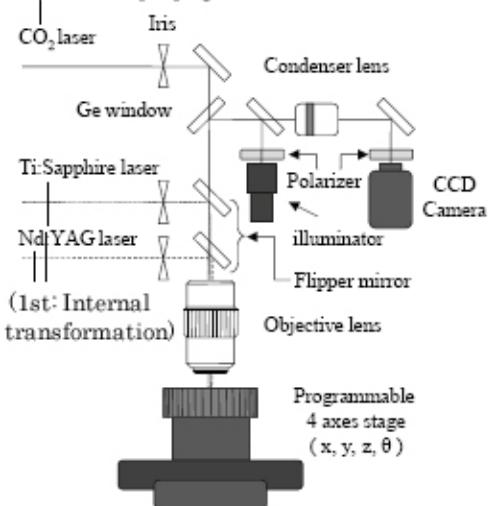
Si microstructure YAG laser



Laser assisted Si etching

参考文献 : K.Minami, Y.Wakabayashi, M.Yoshida, K.Watanabe and M.Esashi, YAG Laser-Assisted Etching of Silicon for Fabricating Sensors and Actuators, J. of Micromechanics and Microengineering, 3 (1993) pp.81–86

(2nd: Crack propagation)



Laser (stealth) dicing of Si-glass structure (Tohoku Univ. – Inst. For Laser Tech.)

Reference : M.Fujita, Y.Izawa, Y.Tsurumi, S.Tanaka, H.Fukushi, K.Sueda, Y.Nakata, M.Esashi and N.Miyanaga , Debris-free Low-stress High-speed Laser Assisted Dicing for Multi-layered MEMS, Trans. IEE of Japan, 130-E (2010) pp.118–123