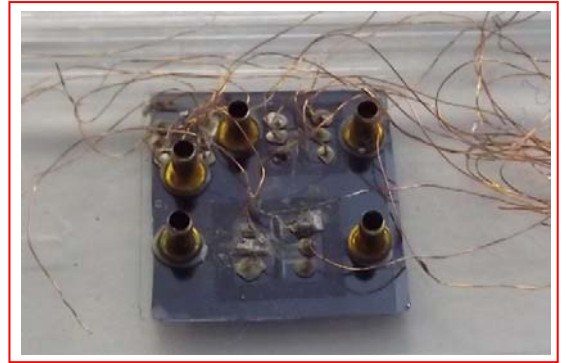
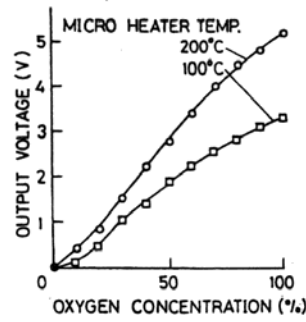
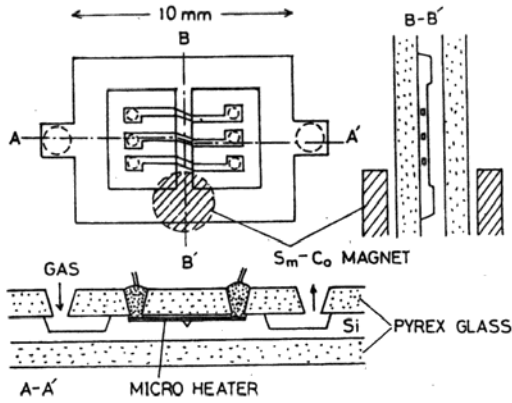
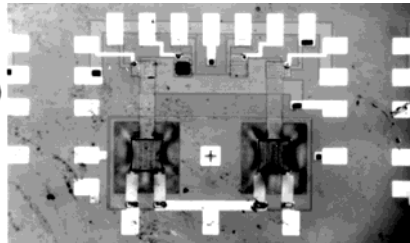
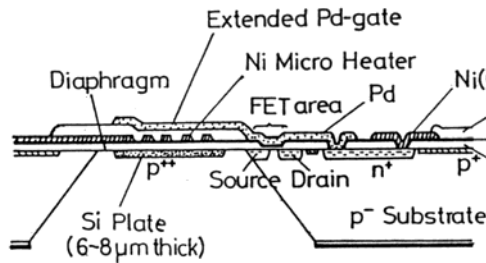


Gas Sensors



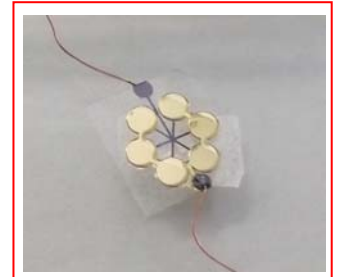
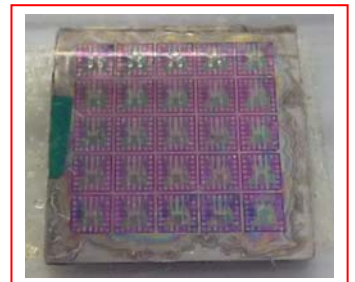
Magnetic oxygen sensor

Reference : M.Esashi, Micro Flow Sensor and Integrated Magnetic Oxygen Sensor Using It, Digest of Technical Papers Transducers'91 (1991) pp.34-37

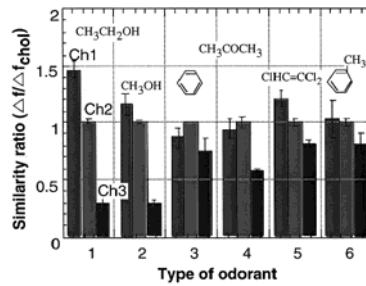
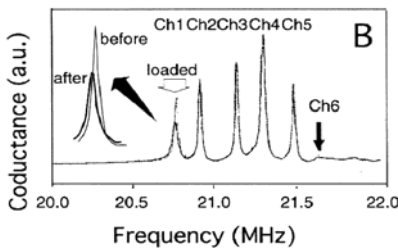
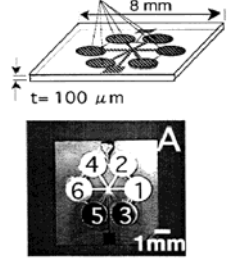


Extended palladium-gate FET (Tohoku Univ. - Linköping Univ. of Tech.. (Sweden))

Reference : F.Enquist, M.Esashi, M.Armgarth, I.Lundstrom and T.Matsuo, Design of a High Temperature Extended Palladium-gate Field Effect Transistor for the Detection of Organic Molecules, Digest of Technical Papers, The 4th Int.Conf.on Solid State Sensors and Actuators (1987) pp.644-648



QCM (ϕ 2mm)

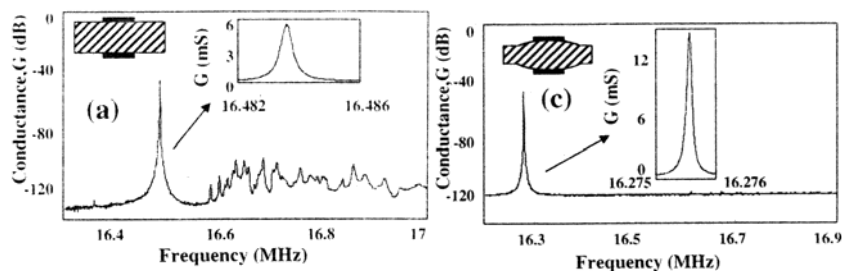
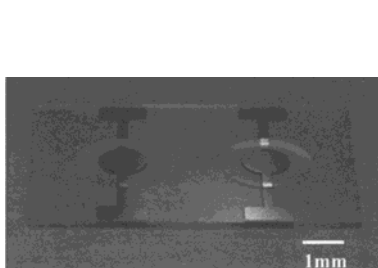


Sensing membrane

- Ch1 : DMPC (Neutral charge, rod)
- Ch2 : Cholesterol (Neutral charge, flat)
- Ch3 : DMPS (Negative charge, rod)

Multi QCM by deep RIE of quartz

Reference : T.Abe and M.Esashi, One-chip Multichannel Quartz Crystal Microbalance (QCM) Fabricated by Deep RIE, Sensors and Actuators, A82 (2000) pp.139-143



Bi-convex QCM

Reference : L.Li, T.Abe and M.Esashi, Fabrication of Miniaturized Bi-convex Quartz Crystal Microbalance Using Reactive Ion Etching and Melting Photoresist, Sensors & Actuators A, 114 (2004) pp.496-500