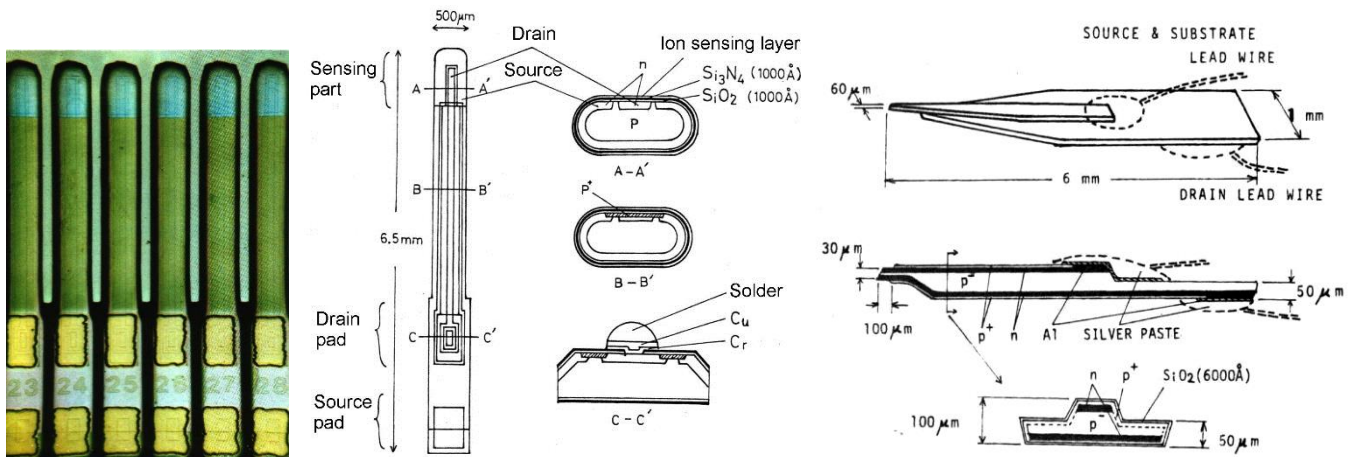
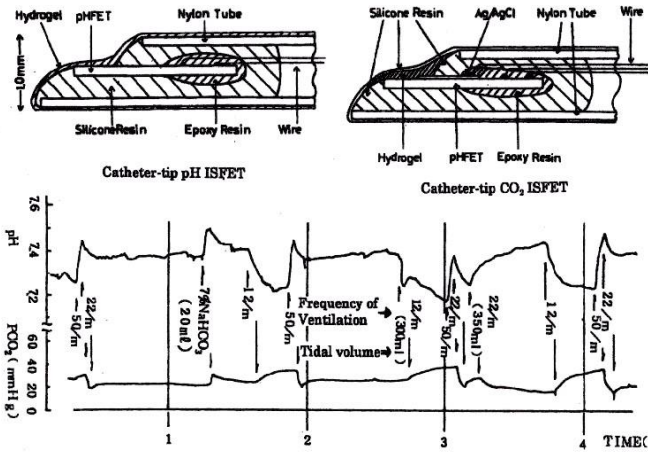


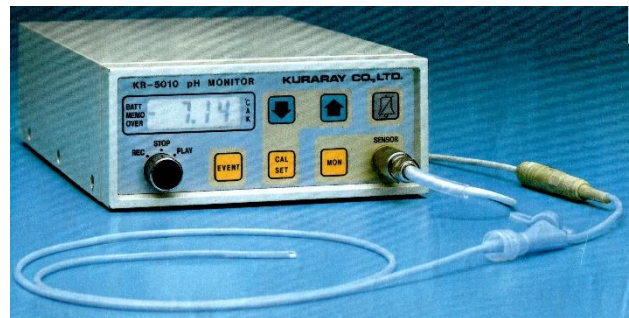
# Micro sensors for medical monitoring



ISFET (Ion Sensitive Field Effect Transistor) and micro ISFET (right)  
 (M.Esashi and T.Matsuo, J.of the Japan Soc. of Applied Physics, 44, Supplement (1975) 339)



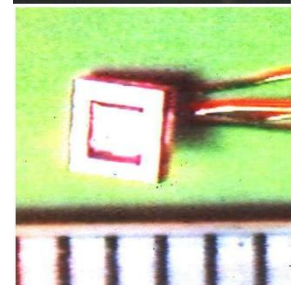
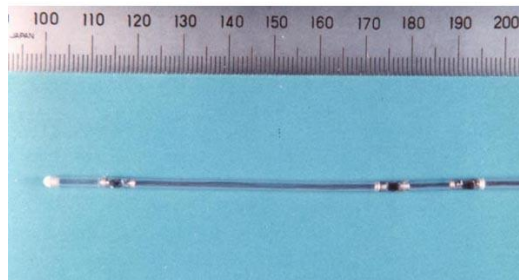
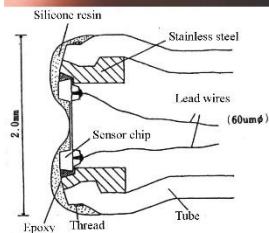
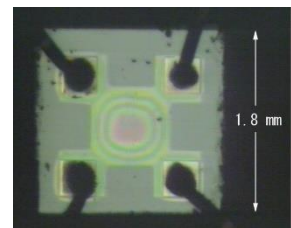
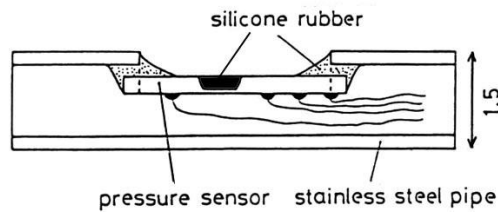
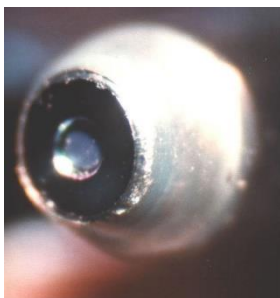
Continuous pH and CO<sub>2</sub> measurement of sed arterial blood of mongral dog by the catheter-tip pH ISFET and catheter-tip CO<sub>2</sub> ISFET.



ISFET and reference electrode in 2.4mm diameter catheter

Commercialized pH, CO<sub>2</sub> monitor catheter (1980 Kurare Co.Ltd., Nihon koden Corp.)

(K. Shimada, M. Yano, K. Shibatani, Y. Komoto, M. Esashi and T. Matsuo, Med. & Biol. Eng. & Comput., 18 (1980) 741)



Piezoresistive blood pressure sensor (Catheter tip, catheter side, implantable absolute pressure sensor)

(M.Esashi H.Komatsu, T.Matsuo, M.Takahashi, T.Takishima, K.Imabayashi and H.Ozawa, IEEE Trans. on Electron Devices, ED-29 (1982) 57)  
 (M.Esashi, Y.Matsumoto and S.Shoji, Sensors and Actuators, A21-A23 (1990) 1048)