Multifunctional Nano-Scanning Electrochemical Microscopy System

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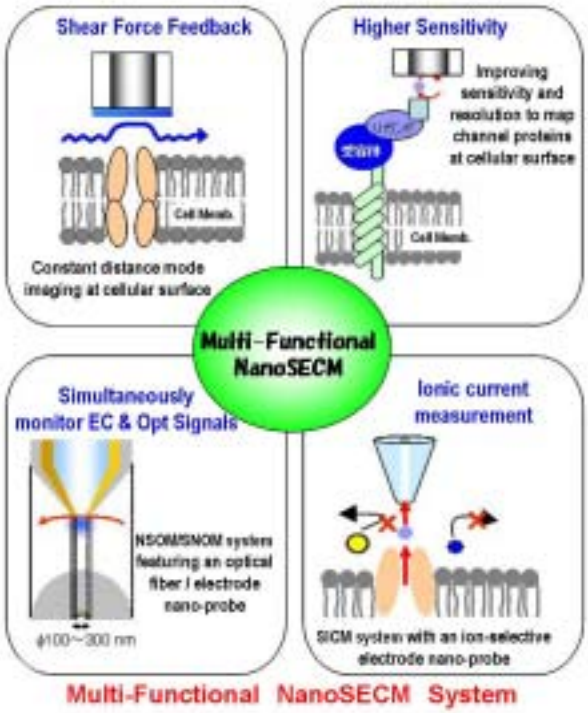
【Outline of survey】

This project aims to construct multifunctional nano-scanning electrochemical microscopy (NanoSECM) system, which allows simultaneous monitoring of electrochemical, optical and topographic information with the higher resolution and sensitivity. Tip-sample distance regulation and nano-probe fabrication are the key technologies to promote this research. We focus on ionchannels and receptors existing in living cell membrane to find out the relation between the signal transductions triggered by ionchannels, gene expressions and cellular viabilities.

【Expected results】

- To construct a novel single cell imaging system to integrate different signals (electrochemical, optical and topographic signals).
- Contribution to the diagnostic applications and heart disease regulated with ionchannel proteins.



【References by the principal researcher】

- Nagamine et al., ***Anal. Chem.* 2005,** 77, 4278.
- Torisawa et al., ***Biomaterials* 2005,** 26, 2165.
- Torisawa et al., ***Int. J. Cancer* 2004,** 109, 302.
- Suzuki et al., ***Langmuir* 2004,** 20 (25), 11005.
- Kaya et al., ***Chem. Comm*. 2004**, 248.
- Oyamatsu et al., ***Bioelectrochem.* 2003**, 60, 115.

【Term of project】 FY2006－2010	【Budget allocation】26,000,000 yen

【Homepage address】 http://www.che.tohoku.ac.jp/~bioinfo/