Research Overview of Nano-Bioelectronics & Systems (NBS) Research Center

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Nano-Bioelectronics & Systems Research Center
Seoul National University

Goal
- Development and clinical application of bioelectronic systems using micro/nanofabrication technologies

Center overview
- Engineering Research Center (ERC) supported by Korean Science and Engineering Foundation (KOSEF), Ministry of Science and Technology (2000.7 – 2009.2)
- Interdisciplinary Research Organization (BT+NT+IT)
- 20 professors, 80 Postdoc. & graduate students over 9 universities
- 4 companies - Industrial collaboration
- NBTC, CNF, Wadsworth Center - International collaboration with Bioengineering Program, Cornell University
**Stages**

1st stage
Design & Fundamental

2nd stage
Chip integration

3rd stage
Clinical application

Goal
Development & clinical application of Bioelectronic systems

In vivo... Clinical... System...

In vitro... on chip... Integration...


**Members**

- Micro-/Nanomachining
  (9 members, 45%)

- Chemical Engineering
  (3 members, 15%)

- Information Processing
  (3 members, 15%)

- Medicine
  (5 members, 25%)

- MEMS/NEMS
  (8)

- Otolaryngology
  (1)

- Optics
  (2)

- Organic Synthesis
  (1)

- Micro-/Nanomachining
  (9 members, 45%)

- MEMS/NEMS
  (8)

- Ophthalmology
  (2)

- Physiology
  (2)

- Biochemistry
  (2)

- Optics
  (2)

- Otolaryngology
  (1)

- Optics
  (2)

- Organic Synthesis
  (1)

- Micro-/Nanomachining
  (9 members, 45%)
Projects

- Neural chip division (Neural prostheses).....11 professors
  - Neural interface by neural probe using semiconductor process
  - Retinal stimulator
  - Brain-Computer interface
  - Artificial olfactory sensing system
  - Auditory cortex stimulation model through cochlear implant

- Cell chip division: Micro-FACS...................5 professors
  - Microfluidic control for cytometry
  - Flow-transfer device
  - Optical characterization of cell structure/behavior
  - Circuit integration & User-interface
  - Micro-lens for optical detection

- Protein chip division..................................4 professors
  - Micromachining for protein patterning & Optical detection system
  - Biomolecular recognition & Surface modification

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