Nanotechnology and the status of Korea Advanced Nano Fab Center

- The 3rd Korea-US Nano Forum –

Apr. 3. 2006

CEO & President of KANC

Joong Won Lee

Contents

Introduction

KANC : "Korea Advanced Nano Fab Center"

A non-profit organization supported by Ministry of Science & Technology of Korea

A national infrastructure for the nano technology development in the field of compound semiconductors, non-silicon technology and other emerging technology

1. Supporting universities and research institutes
2. Supporting industries
3. New model of government funded R&D initiatives

History

- Incorporated 2003.12
- Beginning of Construction 2004. 6
- Completion of Clean Room 2005. 12
- Test & Measurement Services Started 2006.2
- Official Opening & FAB Service Starts 2006. 4. 26

Participationg Organization

KANC

Korea Advanced Nano Fab Center

Budget of 173 million dollars for 5 years program

MoST

Global Inspiration GyeongGi-Do

The Six Consortiums of KANC

Korea Institute of Science and Technology

KORE ELECTRONICS TECHNOLOGY INSTITUTE

SEOUL NATIONAL UNIVERSITY

HANYANG UNIVERSITY

SUNG KYUN KWAN UNIVERSITY

AJOU UNIVERSITY

SAMSUNG

Nanotron TECHNOLOGIES

LG실트론

EZ DIGITAL

semipark

LGS

GigaLane

SPECTRON TECH www.spectrontech.com

TIOZ

HANBON

apet Co.,Ltd.

Mission Telecom

(주) D.S 精工 D.S PRECISION IND.CO

에피밸리(주)

GSELL (주)지 셀

Ellipso Technology®

Sunic

PSIA Advanced Scanning Probe Microscopes

NANOSTORAGE

SIIC (주)상일정보통신

DigiwaveTech semiconductor equipment business

KANC Building

KANC

Korea Advanced Nano Fab Center

- FAB Building : 3,500 m^2 (37,600 ft^2)
- R&D / Venture Building : 46,650 m^2 (502,100 ft^2)

Gwanggyo Techno Valley

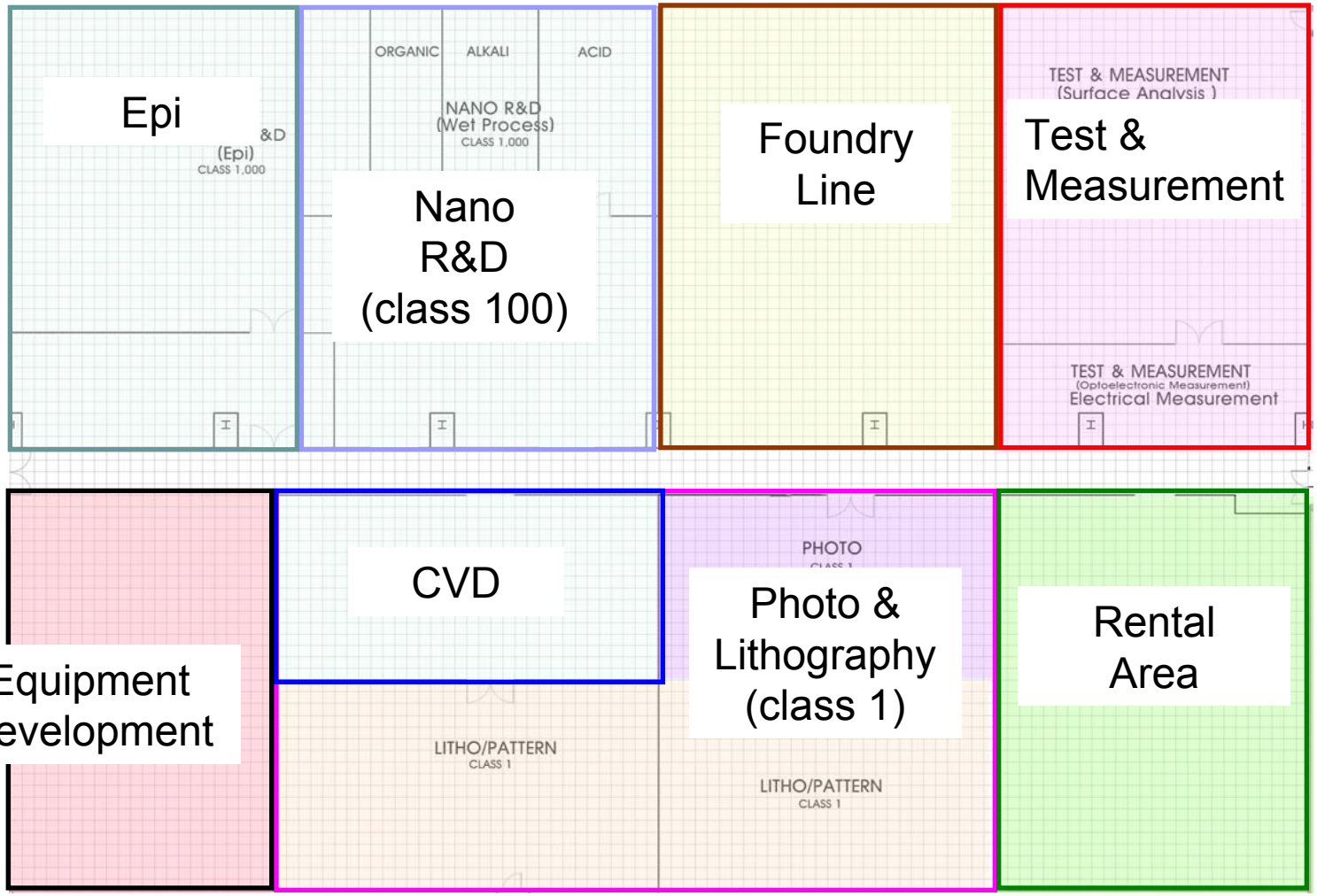
❍ R&D Cluster for high technology & business development (30Km south from Seoul)

KANC Building

- FAB Building : 3,500 m^2 (37,600 ft^2)
- R&D / Venture Building : 46,650 m^2 (502,100 ft^2)

FAB Layout

❍ **One of the largest & the best super clean room facilities in III-V industry**
: 1 Floor for clean room, Sub FAB for utilities



Fab Facility

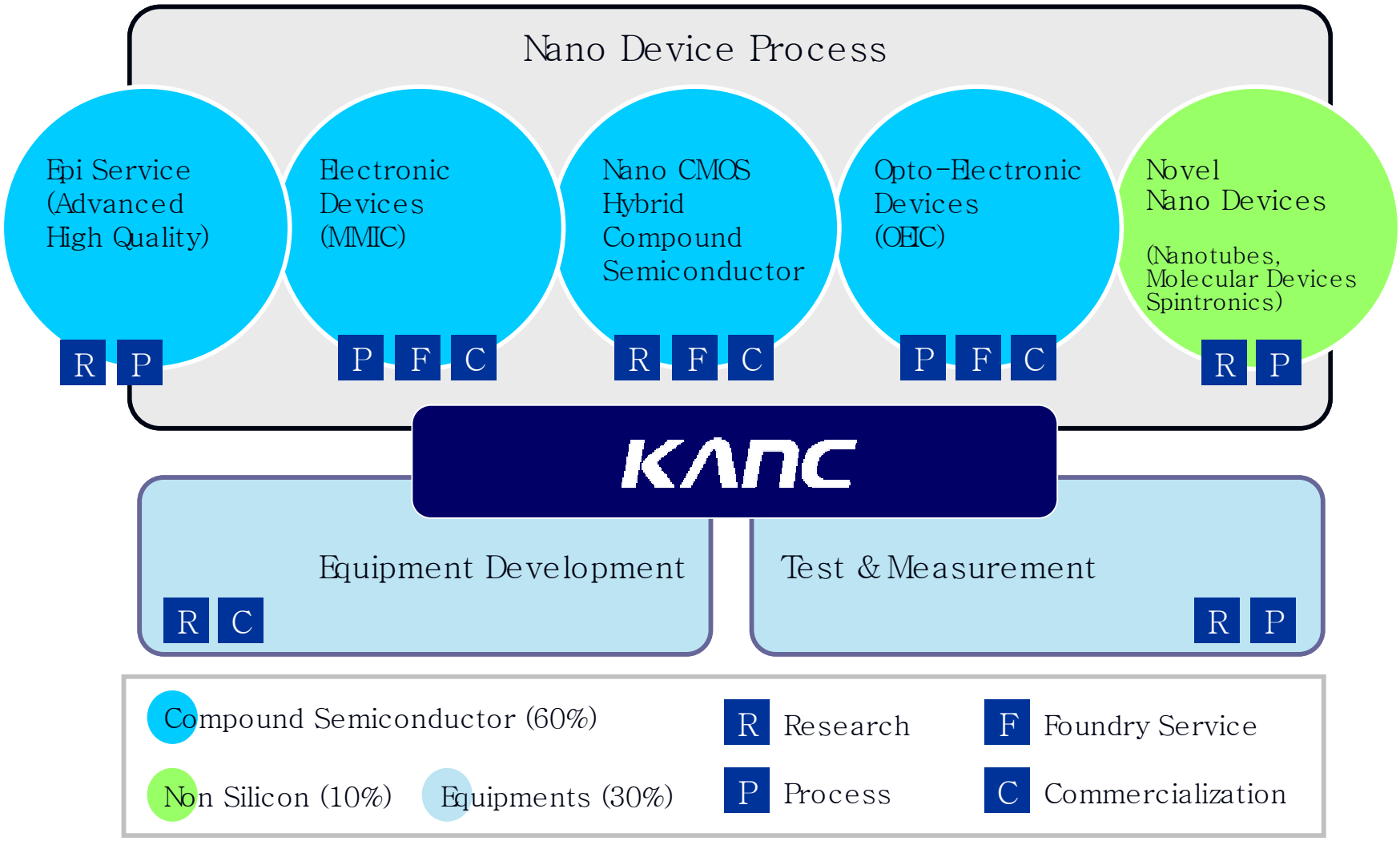
Nano Device Process Fab (60% of Clean Room Area)

- Litho / Pattern Zone ($661m^2$)
- Full Process Zone ($430m^2$)
- Nano R&D Zone ($1,124m^2$)
- Test & Measurement Fab ($397m^2$)
- Equipment Development Fab ($331m^2$)

FAB Service

KANC

Korea Advanced Nano Fab Center



User Friendly “Customer Service System”

KANC

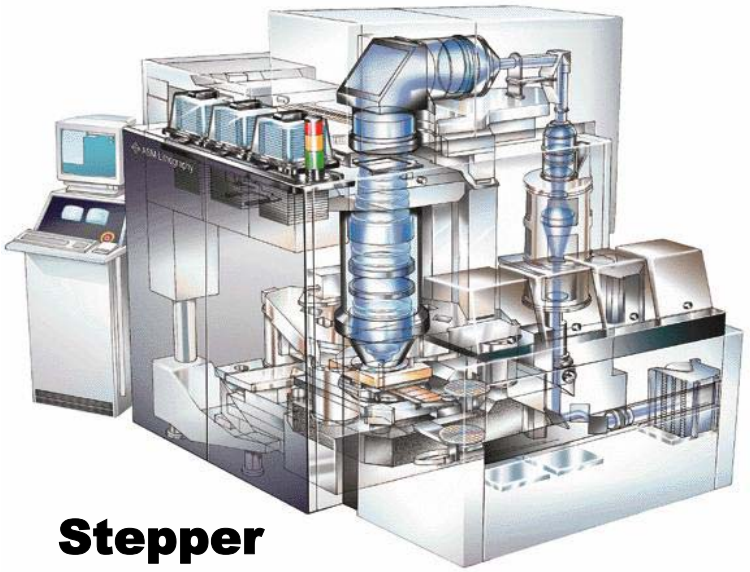
Korea Advanced Nano Fab Center

Web based on-line booking, scheduling, monitoring, and payment

Main Equipment

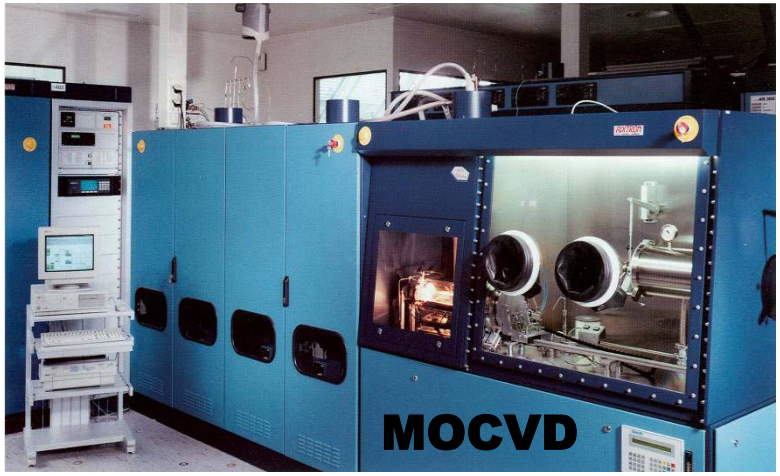
KANC

Korea Advanced Nano Fab Center



Stepper

E-beam Litho



MOCVD

FIB

Fab Facility

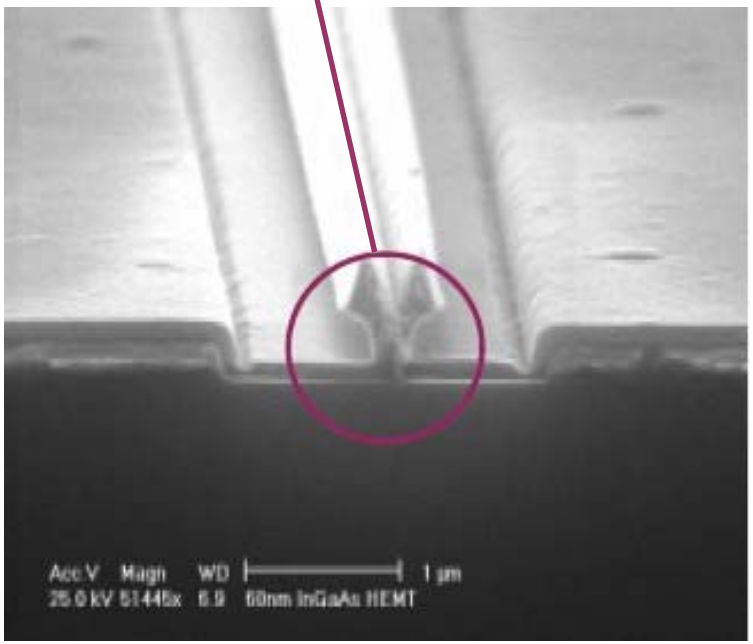
KANC

Korea Advanced Nano Fab Center

Nanolithography Applications

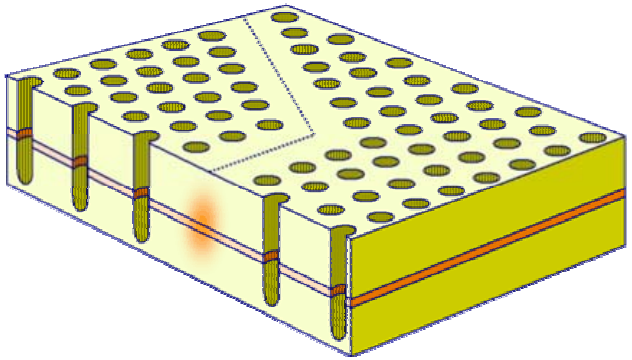
: pHEMT

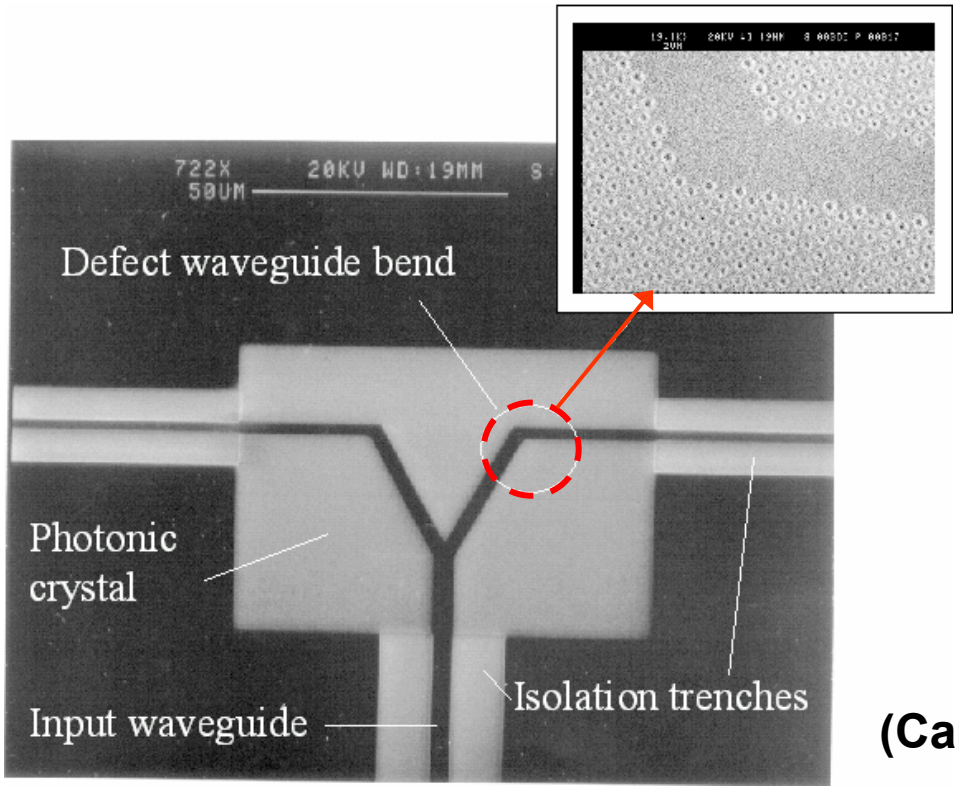
T-gate of InGaAs pHEMT by
50 nm Resolution E-beam Lithography



(Seoul National Univ.)

Photonic Crystal Waveguide Fabrication by E-beam Writer or FIB Patterning (~200nm)





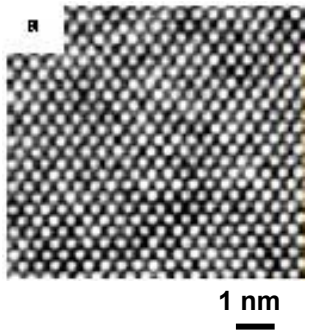
(Cambridge Univ. & SKKU)

Nanolithography Applications

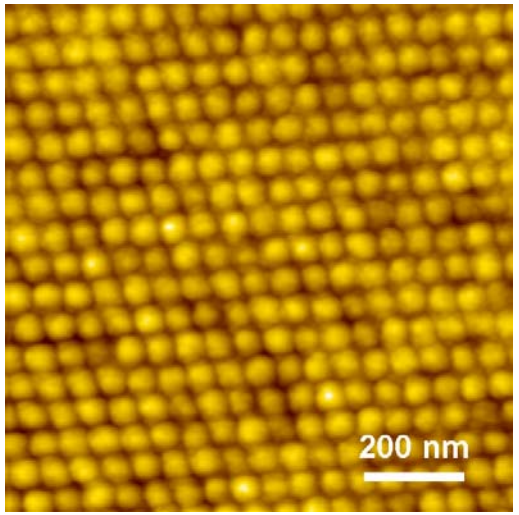
: Quantum Dots

Quantum Dot Patterning by AIPEL (Atomic Image Projection E-beam Lithography)

Si atoms



Resist patterns

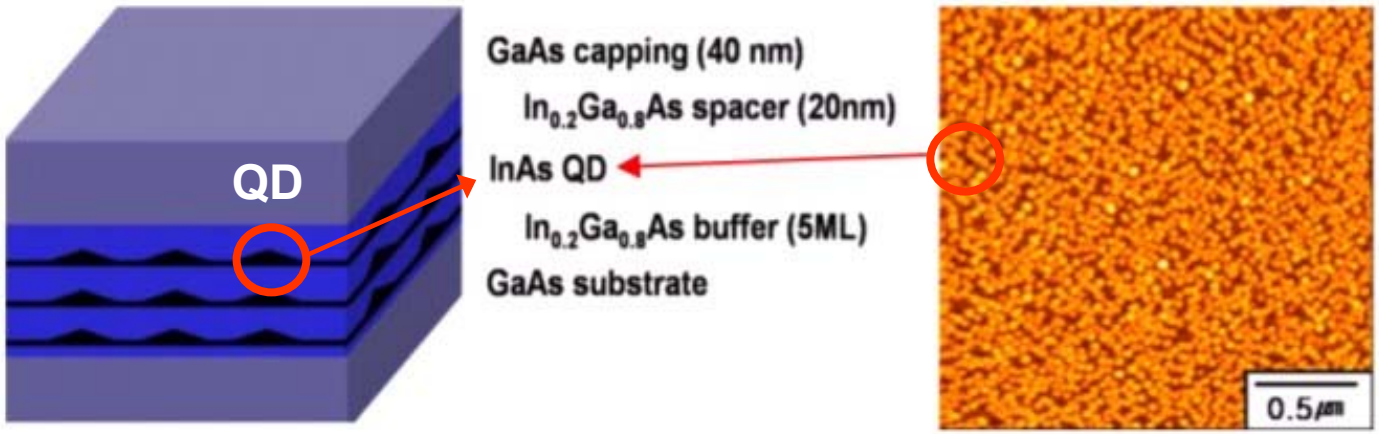


(Seoul National Univ.)

Epitaxial Growth Applications

: Quantum Dots

Self-assembled Compound Semiconductor Quantum Dots Grown by MOCVD



(Seoul National Univ.)

Summary

- National infrastructure for the nano technology R&D and business support
- State-of-the-art facility & equipment
- Strong network of academia, industries, and research communities
- User friendly service, facility, and location

Thank you !!

**KANC would provide the best service
for worldwide customers
with the high quality
and user friendly operation.**

http://www.kanc.re.kr