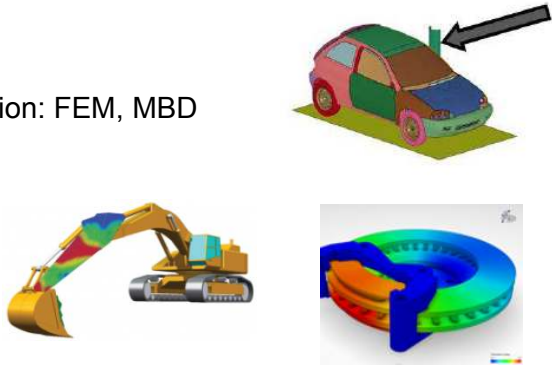


“Computer Aided Engineering (CAE)” Lab.

<http://cae.konkuk.ac.kr>

- **PI: Chang-Wan Kim, goodant@konkuk.ac.kr**
- **Lab Introduction**
 - **2 Post Doc., 3 Ph.D. candidates, 7 M.S. candidates**
 - **52 SCI(E) papers publication** [One Vietnamese Ph.D. student !](#)
 - Structure Analysis
 - Finite Element Analysis (FEM)
 - Multi-Body Dynamics (MBD)
 - Application areas:
 - Automobile structure analysis and vibration: FEM, MBD
 - Electrical vehicle design and analysis
 - Aircraft, Missile system analysis
 - Magnetic levitation train dynamics
 - Wind turbine design and analysis
 - Nano Structure/Device analysis
- **Opening positions**
 - **Ph. D or MS/Ph.D integration candidates ONLY**
 - [Will do Hyundai Automobile Vibration Project](#) : **Welcome ! Civil engineering students !!**
Mechanical engineering students !!
 - structure analysis, FEM
 - vibration analysis



Current projects: Funded by Hyundai, POSCO, Samsung

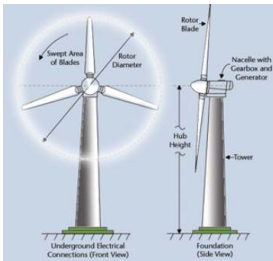
Electrical Vehicle Analysis

- Electrical Vehicle Analysis
- **NASTRAN, ABAQUS, ADAMS**
 - Structure, Vibration analysis



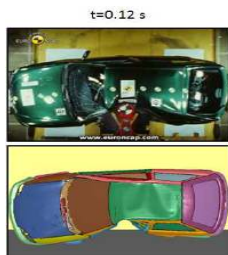
Wind Turbine Analysis

- Blade analysis
- Composite structure tower analysis
- Gear drivetrain analysis
- Bearing analysis
- **ANSYS, Fluent**



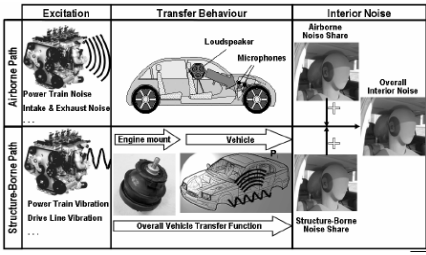
Car Crash Analysis

- Car collision and crash Analysis
- **LS-DYNA**



NVH (Noise, Vibration, Harshness) analysis

- Automobile Noise and Vibration analysis
- **NASTRAN**

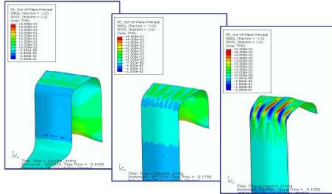


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Current projects: Funded by government, many industry companies

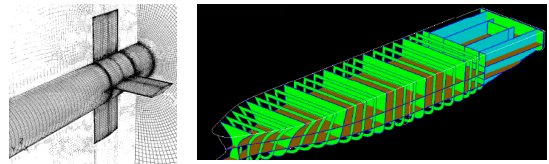
POSCO metal forming

- Metal forming analysis
- Plastic deformation
- **ABAQUS**



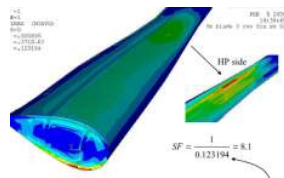
Weapon System Analysis

- Missile
- Aircraft
- Submarine
- **NASTRAN, ANSYS, Fluent**



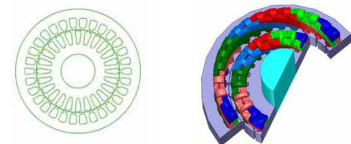
Composite Structure

- Composite Blade Analysis
- Composite Aircraft
- **NASTRAN**



MOTOR Electromagnetic Analysis

- Electrical vehicle MOTOR
- **MAXWELL, ANSYS**



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Current projects: many industry companies

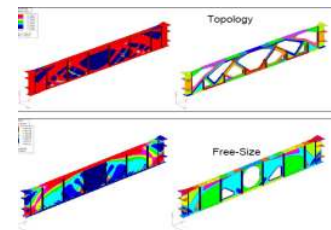
Parallel Computation

- MPI parallel computation: **FEM vibration**
- OpenMP parallel computation: **FEM Acoustics**
- GPU parallel computation (CUDA): **FEM vibration**



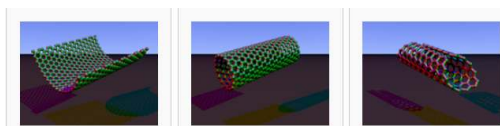
Optimal Design

- Structure Weight minimization
- Noise reduction
- Topology
- Sensitivity



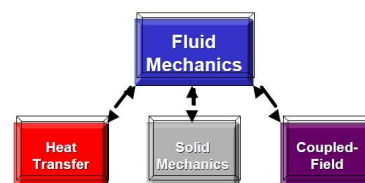
Nano Structure/Device Analysis

- CNT, Nanotube, Graphene vibration
- **FEM, Molecule dynamics(MD)**



Fluid-Structure Interaction (FSI)

- Interface FEM with CFD
- **Fluent & ANSYS, ABAQUS, NASTRAN**



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Smart Material Devices & Applied Nano/Micro Technology Lab.



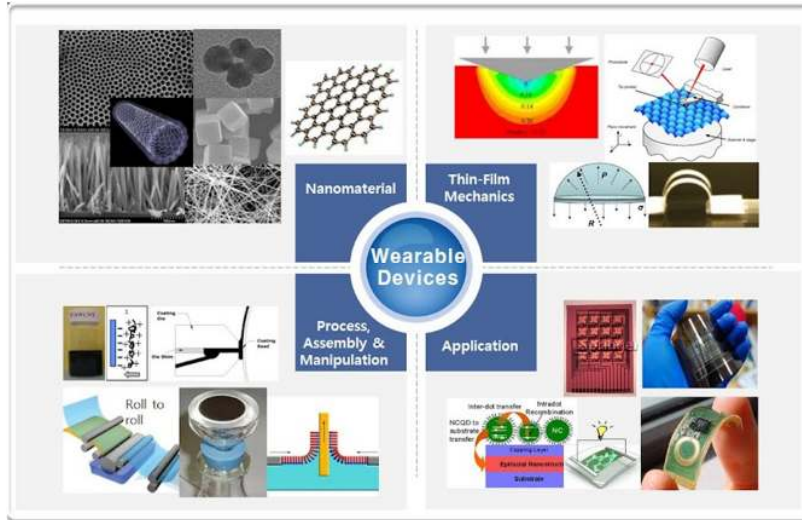
PI: Dongjin Lee

Email: djlee@konkuk.ac.kr
<http://smnano.konkuk.ac.kr>

Lab mission

We are studying on a broad range of **materials**, **devices** and applied **nano/micro technologies** in order to fabricate **wearable devices** for contemporary on-demand applications.

Nanoparticle, nanocube, nanotube, nanowire, graphene, nanotemplate



Atomic force microscopy, nanoindentation, bulge test, bending & fatigue test

Molecular self-assembly, filtration, R2R printing, Langmuir-blodgett, M/NEMS, coating

Flexible electronics, solar cell, transistor, organic light-emitting diode (OLED), supercapacitor, touch panel, RFID, display, sensors



Current projects

Nanomaterial-Based Transparent & Conductive Electrode for Flexible Electronics

A LED array, Patterned Ag NWs, Paper, LED array

B Touch panel to computer interface, LCD monitor, Touch panel, AGNW Touch Panel, KAIST ANTS Lab

Touch Panel & OLED Application?

Flexible Printed Circuit Board (FPCB)

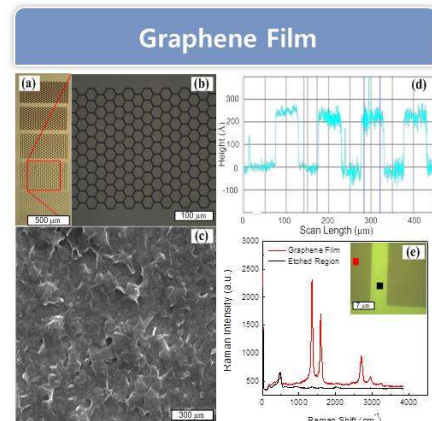
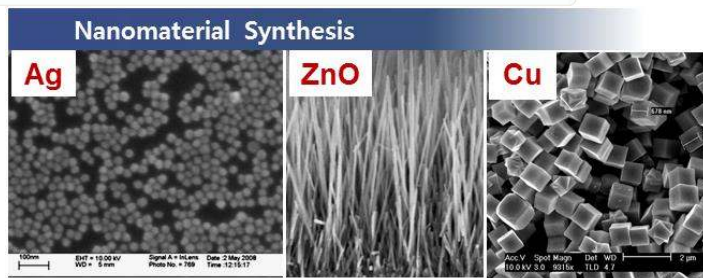
2D - Model

Total Force, Adhesive force - F_A , Adhesive force - F_C

INK, GRAVURE CELL, SUBSTRATE, INK Cohesive force - F_C

NIP pressure, shear of printing speed

- Printing of nanoink & application to flexible electrode (or PCB)
- Line pattern generation through screen or R2R gravure printing
- Electrical & mechanical characterization



Opening position:



MS, PhD student or MS/PhD joint student: 1 person