

## □ Areas of Research

The research activities in Aerospace Engineering can be grouped into four major areas as follows;

### 1) Aerodynamics and Fluid Dynamics

Six professors in this group have research interests in diverse fields ranging from biofluids to hypersonic phenomena. From computational method using unstructured grid to multi-disciplinary optimization. This group is involved in most of the aerospace projects in Korea and provide their expertise in government sponsored development projects. Professors in this group are;

Chang, Keun Shik, University of California, Berkeley, Ph.D. ('77), [kschang@kaist.ac.kr](mailto:kschang@kaist.ac.kr), <http://aero3.kaist.ac.kr/cfdlab/hello CFD.htm>, Fluid dynamics, MAV dynamics.

Park, Seung O, Iowa State Univ., Ph.D. ('81), [sopark@kaist.ac.kr](mailto:sopark@kaist.ac.kr), <http://sop1.kaist.ac.kr>, Wind tunnel, Turbulent flows.

Kwon, Jang Hyuk, Cornell Univ., Ph.D. ('86), [jhkwon@kaist.ac.kr](mailto:jhkwon@kaist.ac.kr), <http://cfdkwon3.kaist.ac.kr>, Computational fluid dynamics, Optimum design.

Lee, Duck Joo, Stanford Univ., Ph.D. ('85), [djlee@kaist.ac.kr](mailto:djlee@kaist.ac.kr), <http://acoustic.kaist.ac.kr>, Aeroacoustics, Helicopter.

Kwon, Oh Joon, Georgia Institute of Technology, Ph.D. ('88), [ojkwon@kaist.ac.kr](mailto:ojkwon@kaist.ac.kr), Department Head, <http://cadol.kaist.ac.kr>, Computational fluid dynamics, Helicopter.

Park, Chul, Univ. of London., Ph.D. ('64), [cpark216@kaist.ac.kr](mailto:cpark216@kaist.ac.kr), <http://aero3.kaist.ac.kr/cfdlab/hello CFD.htm>, Hypersonics, Aerothermodynamics.

### 2) Composite Structures and Structural Dynamics.

This group conducts research on diverse engineering materials as well as structures that are built by them. There are four professors in this group with research interests in areas of smart structures, control of flow-structure interference, nano-material, and health monitoring of aerospace structure.

Hong, Chang Sun, Pennsylvania State University, PhD ('77), [cshong@kaist.ac.kr](mailto:cshong@kaist.ac.kr), President of KAIST, <http://smartech.kaist.ac.kr>, Composite material, Smart structure.

Lee, In, Stanford Univ., Ph.D. ('86), [inlee@kaist.ac.kr](mailto:inlee@kaist.ac.kr), <http://isvc.kaist.ac.kr>, Aeroelasticity, Vibration control.

Kim, Chun Gon, KAIST, Ph.D. ('87), [cgkim@kaist.ac.kr](mailto:cgkim@kaist.ac.kr), <http://smartech.kaist.ac.kr>, Composite material, Smart structure.

Han, Jae Hung, KAIST, Ph.D. ('98), [jaehunghan@kaist.ac.kr](mailto:jaehunghan@kaist.ac.kr), <http://isvc.kaist.ac.kr>, Smart structures, Vibration control, Space structures.

### 3) Propulsion and Combustion

Applied as well as fundamental research regarding aerospace propulsion system are major undertakings in this research group. Various topics on energy transformation, power devices, combustion, and heat transfer are under progress. Specifically, the micro thrusters and the micro scale catalytic reactor for power application are also being developed. Additionally, the rarefied gas analysis for space application, the supersonic combustion for application to chemical laser, and the inverse method for design optimization in combustor and heat exchanger are now of issue in this group.

Baek, Seung Wook, University of Michigan, Ann Arbor, Ph.D. ('85), [swbaek@kaist.ac.kr](mailto:swbaek@kaist.ac.kr), <http://procom.kaist.ac.kr>, Propulsion, Combustion.

Kwon, Sejin, University of Michigan, Ann Arbor, Ph.D. ('91), [trumpet@kaist.ac.kr](mailto:trumpet@kaist.ac.kr), <http://rocket.kaist.ac.kr>, power systems, power MEMS, Jet propulsion.

### 4) Flight Dynamics and Control

This group studies dynamic behavior of flight systems under different navigation requirements. The aim is to

obtain optimum trajectory of the vehicle and guidance and control methods to achieve that purpose. Currently there are three professors including one foreign faculty member in this group.

Tahk, Min Jae, University of Texas at Austin, Ph.D. ('86), [mjtahk@kaist.ac.kr](mailto:mjtahk@kaist.ac.kr), <http://fdcl.kaist.ac.kr>, Flight control, Optimization method.

Bang, Hyo Choong, Texas A&M Univ., Ph.D. ('92), [hcbang@kaist.ac.kr](mailto:hcbang@kaist.ac.kr), <http://fdcl.kaist.ac.kr>, Sensors, Satellite control

Krishna Dev Kumar, Kanpur, India. Ph.D. ('97), [devkrishna@kaist.ac.kr](mailto:devkrishna@kaist.ac.kr), <http://fdcl.kaist.ac.kr>, Dynamics & Control.

Aerospace Engineering at KAIST has been remarkably resilient and accommodating changing demands of the industries and government. New applications of fundamental technology are constantly being explored and new possibilities are being demonstrated in the laboratories. Smart materials, biofluids, and nano / micro systems are only a few of such new endeavors in Aerospace Engineering.

#### □ International Exchange

The Division of Aerospace Engineering at KAIST signed academic exchange agreements with counterparts of a number of renowned foreign universities. Since 2000, 11 students from Aerospace Engineering at KAIST have visited or are visiting universities in the US, Japan, France, Australia, Swiss, and Sweden for 6~12 month periods. In order to accommodate the needs of the international students, eight out of 18 courses offered in Aerospace Engineering on average are taught in English.

Five post-graduate researchers from Japan, Egypt, and China are visiting with the department for a one year period. In total, four professors of foreign citizenship are currently members of the Aerospace Engineering faculty.