

## Axiomatic Design and Fabrication of Composite Structures for Robots, Machine Tools and Automobiles

이대길\*

한국과학기술원 기계공학과  
(dglee@kaist.ac.kr\*)

The idea that materials can be designed to satisfy specific performance requirements is relatively new. Materials were developed by repetitive trial-and-error. The composites field is unique in that composites are designed to satisfy the performance requirements and then manufactured. This field has developed rapidly during the past three decades thanks to convergence of the availability materials and the need for new light weight materials. Many new polymeric resins and high performance reinforcing fibers have been developed to produce light weight, high performance materials for transportation and defense industries.

In the field of composites, the development of new composites follows the modern paradigm of the materials world, which starts out specifying the customer needs. Based on the specified needs, the desired properties of the composite are specified in the functional domain (FRs). To create the composite with the specified properties, we design the morphology of the composite in the physical domain or design parameters (DPs). Then, means of manufacturing the composite are characterized by process variables (PVs). In this paper, the axiomatic design theory will be briefly introduced.