Advanced and innovative CAE cultivated by Prof. Noboru Kikuchi: A symposium in honor of Professor Noboru Kikuchi

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Many advanced computational methods have thus far been developed in the field of computational mechanics but despite technical enhancements, we feel that the majority of such methods have not yet received sufficient attention in the area of CAE, especially in industries, where engineers far and wide encounter demanding and difficult practical problems.

Methods of topology optimization and multi-scale computational homogenization originated by Prof. N. Kikuchi have been expanded for practical applications, and have the potential to solve the above practical problems. We invite you to submit papers on topics dealing with the development and application of computational methods in advanced and innovative CAE that are intended to overcome current difficulties in a variety of industrial fields.

Methods related to topology optimization and multi-scale computational methods include:
* Mathematical theories of topology optimization
* Application of topology optimization to multi-physics problems
* Application of topology optimization to multi-scale design problems.
* Computational homogenization for material characterization
* Modeling of material behavior involving multiple physics and/or chemical reactions
* Global-local type modeling and analysis for inhomogeneous structures
* Geometry modeling for highly heterogeneous micro/meso-structures
* Efficient computational schemes for multi-scale computations

Thus, the following concrete topics would be most welcome:
*A new topology optimization method based on the concept of phase field theory
*Application of topology optimization to MEMS
*Application of topology optimization to compliant mechanism, sensor, and actuator designs
*Application of topology optimization to electromagnetic device designs
*Application of topology optimization to microstructure designs
*Application of computational homogenization in characterizing effective properties of specific materials
* Enhancement of multi-scale computational methods for solving practical problems
* Implementation or commercialization of multi-scale methods in general-purpose CAE software
* Improvement or adjustment of multi-scale methods for industrial applications
* Multi-scale strength characterization for safety requirements in CAE