Preface

In the year 2011, Tsinghua University is going to celebrate her 100th anniversary (1911–2011). For this event, Science China Press invites me to organize a special issue contributed by faculty of the Department of Engineering Mechanics (DEM). In addition to marking their research strength and pioneering work at this historical moment, we also anticipate more collaborations between DEM and other institutes.

Tsinghua University is particularly renowned for its strength in engineering—more than a half of the faculty specialize in engineering—and organized into twenties of engineering departments. The Department of Engineering Mechanics has been persistent in bridging the basic sciences and engineering, or playing as “engineering science”. This unique characteristic has helped students to develop their careers in not only mechanics but also various engineering fields, academia, and management.

The Department was established on July 3, 1958 with specialties of Fluid Mechanics and Solid Mechanics, with the other two specialties Engineering Thermophysics and dynamics set up respectively in 1959 and 1961. In 2004, the Department joined the School of Aerospace. Currently, the DEM has a faculty of 66 and around 550 students (330 undergraduates, 53 graduate students and 176 PhD students). It is consist of five institutes (solid mechanics, fluid mechanics, dynamics and control, engineering thermal physics, biomechanics and medical engineering), and two key laboratories under the Ministry of Education.

The DEM has been continuously ranked No. 1 among the mechanics departments in China. Now the department faces an opportunity or challenge to quickly evolve into a leading research and education institute in the world in step with the dramatic development in China and globalization. To realize this goal requires inviting the best young faculty and students and to create a healthy environment for their development. As two examples of the efforts toward this goal, the Tsien Tsien-shen Elite Class in Mechanics was set up in 2009, and the Center for Nano and Micro Mechanics was initialized in 2010.

Recent years have seen very active research here in the DEM, especially in the areas of nano and micro-mechanics, bio-mechanics, biomedical engineering and advanced mechanics of materials. The current special issue covers their representative studies, recording the progress in these directions.

For this special issue, I would like to particularly thank my colleagues Profs. FU Song and SHI HuiJi, who did most editorial works, and the special issue editors Ms. ZHU QuanE and Dr. HUANG YanHong who made this issue.

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