From the Guest Editor

NANOSCALE FLOW: RELIABLE, EFFICIENT, AND PROMISSING

In the last decade, nanoscale flows arising in environment science (*e. g.* motion of nanoparticles in air or a duct; adsorption of phosphorus by bioretention media) and modern textile engineering (*e. g.* charged jet in electrospinning process) have been caught much attention. Nanoparticles in air or in a curved duct have become a hot and important topic in both academic and social communities, because they become one of the most common unhealthy components of air pollution.

Particle size and its concentration affect not only the environment but also the health of human beings. The collision efficiency of Brownian coagulation and the particle size distribution will greatly affect flow properties and nanoparticles deposition. Theoretical analysis and experimental verification were carried out recently and much achievement was obtained. This regular issue consists of some articles on this development.

This issue also emphasizes on nanofiber fabrication using the electrospinning, the bubble electrospinning, and their various modifications. Seventy years after the discovery of the principle of electrospinning by A. Formhals in 1937, we are only just beginning to understand the thermal effect in nanofiber fabrication. Weakness of electrospun nanofiber has impeded its industrial applications for a long period, and now the thing is changed, the bubble electrospinning and the blown bubble-spinning have been giving promising ways for mass production of nanofibers. Various practical mathematical models for charged jets during the spinning process are established, and the spinning process and the production properties can be well controllable by temperature.

Various analytical methods (*e. g.* the variational iteration method and the homotopy perturbation method) and numerical technologies (*e. g.* finite element method and Monte Carlo simulation)are adopted in this issue to shed new light on mechanics insight into a model of a practical problem and mathematical explanation of various phenomena arising in nanoflows. Fractal approach is also a promising approach to biomimic design, and fractal harmonic law suggests a good way for design a moving surface (*e. g.* swimming suit) with a minimal force. Some new developed technologies can optimize environmental flows and fabricate nanoscale PVA-Graphene film with thickness of about 4 nm.

Many articles in this issue confirmed that the nanoscale flow is promising as well as having a wider applicability in various fields.

Included herein is a collection of original refereed research papers by well established researchers in the field of applied mathematics, fluid mechanics, nanotechnology, and textile engineering. We hope that this regular issue will prove to be a timely and valuable reference for researchers in this area. Special thanks go to the referees for their valuable work. We here thank Prof. Dr. Simeon Oka, the Editor-in--chief of the journal *Thermal Science*, for providing us with the opportunity to produce this regular issue on this exciting field.

The Guest editor of this issue

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