Preface

Computers and Flow Visualization

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Recent progress of PC performance has made it possible for anyone to conduct flow simulations and visualization. There are now a lot of free or inexpensive software available, and simulations and visualization that were special analytical tools only for the researchers in leading-edge research laboratories 10 to 20 years ago have become familiar tools for any researcher and student. With these tools on hand, we still need something more. The key issue is that these are only the "tools" and the research results strongly depend on how we use them. We need to know it to find out flow mechanisms or to discuss the details of flow structures. Important results only appear through the consideration of what to visualize and what we learn from the visualized images. That is the real flow analysis.

Recent progress of PC performance has also made it possible to carry out surface or volume measurement of flows in experiments. PIV is a representative tool as readers notice that many articles on the subject recently appear in this journal. PSP (pressure sensitive paint) technique is a good and strong tool for surface measurements and is becoming widely used. This technique requires a certain amount of pressure change and has been mainly used for high-speed flows. However there are many projects under way all over the world to widen its application areas. The PSP technique is unique in the sense that quantitative pressure distributions are obtained directly through the images obtained by the CCD camera. As the molecular sensors, light sources, good cameras are all important for the reliable data acquisition, collaboration among fluid dynamicists, chemists and optic specialists is necessary for the development of good PSP systems. One good example is the project called MOSAIC (Molecular Sensor for Aero-Thermodynamic Research: http://www.nal.go.jp/ndivision/fluid/eng/mosaic/index.html) currently under progress in Japan.

The present issue tries to assemble the recent effort on the PSP techniques as a mini-special topic although it is not a special issue and includes articles in other research areas. Unfortunately, some of the planned manuscripts did not arrive in time but the editor believes this issue still provides useful information on PSP techniques.

As a managing editor of this issue, I would like to express my sincere appreciation to all the authors, reviewers and other people who helped me to organize this issue. I hope the articles cultivate the discussions on the fluid dynamic research with visualization.

Managing Editor
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