A Word from the Subject Editor

This issue of the journal *Thermal Science* contains 27 papers dedicated to the research in the field of internal combustion engines. The attention of the researchers is mostly oriented to the global problems facing our planet, whose solution is crucial for future sustainable technological development. These are of course, on the one hand, energy efficiency and problems in finding and using alternative and preferably renewable fuels, and, on the other hand, environmental pollution. As these problems are highly related to internal combustion engines, research efforts are being focused in that direction.

Research methods range from the application of different levels of mathematical simulation of engine working process to experimental investigation of engine global brake parameters and parameters of working process using in-cylinder events recording and analyzing. Mathematical simulation allows the assessment of the impact of structural and regulatory parameters on engine energy efficiency and environmental characteristics for a broad range of parameter values, which otherwise would be very expensive, time-consuming, and sometimes impossible to evaluate experimentally. The experiments in this approach are of small scale and mainly used for calibration and verification of simulation models. Other approaches use mathematical modelling and sophisticated experimental procedures simultaneously for the identification of unknown or partially known simulation model parameters. On the other hand, some of the papers published in this issue were of purely experimental character and mathematical methods were mainly used for processing the experimental results.

If we evaluate the conditional classification of papers according to the type of applied mathematical models, then the first 8 papers use the multidimensional modelling approach of the flow field and heat and mass transport phenomena and chemical reactions in the workspace (the CFD modelling approach). In the next 8 papers the so-called dimensionless thermodynamic models are applied, usually with a phenomenological approach to some important aspects, such as unsteady flow in pipelines, flame propagation through the chamber in spark-ignition engines or development of fuel jet and combustion in diesel engines. Also in this category are the articles that deal with regression modelling of the experimental results and the application of fuzzy logic in simulation.

The following 9 papers are of purely experimental character and are mainly dealing with laboratory testing of energy and environmental characteristics of engines operated with different types of alternative fuels and their blends with conventional mineral fuels.

In papers dealing with mathematical simulations, as well as in those concerning the experimental results of investigations, both spark-ignition and compression-ignition engines are considered. Also, unconventional combustion systems, for example HCCI (homogeneous charge compression ignition) have been investigated. The problems of alternative fuels application (different types of biodiesels, alcohols, compressed natural gas, generated biogas, the addition of hydrogen, *etc...*) have been investigated in a large number of theoretical and experimental research articles.

In addition to papers covering energy and environmental problems of the internal combustion engines, primarily arising due to their status as the primary power source in auto transport, there are two papers dealing with the conditions and organization of traffic, which is an important aspect in the overall effort to increase energy efficiency and environmental protection.

On a final note, I can say that it is a great satisfaction to see several papers by very young authors – doctoral students and even candidates for doctoral studies. Guided by the principle that research activities of young people should be stimulated, the review process for these papers was particularly sensitive and aimed at encouraging and helping them to achieve full potential while, of course, maintaining the criteria for the quality of the journal.

Prof. Dr. Miroljub Tomić, Subjec editor
Faculty of Mechanical Engineering,
University of Belgrade, Belgrade, Serbia

Note: As earlier, we listed names of the experts accepted to made reviews of the papers published in this issue.

List of reviewers involved in the choice of papers for this issue