Editorial

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Biographical notes: Hakan Serhad Soyhan has been a member of the Department of Mechanical Engineering, Sakarya University since 1992. He received his BEng (1992), MSc (1995) and PhD (2000) from Istanbul Technical University and did post-doctoral research in chemical kinetics at the Combustion Physics Division at Lund University in Sweden and on HCCI engines and chemical kinetics at Shell Global Solutions in Chester, UK. Currently, he has been working on combustion modelling studies in relation to emission reduction and control of emissions from transportation as an Associate Professor in the Engineering Faculty at Sakarya University. He is the Head of Local Energy Research Association and a member of associates in the Turkish Society of Mechanical Engineers, as well as in the ASME ICE section.

Gautam Kalghatgi joined Saudi Aramco in 2010 after 31 years with Shell Research Ltd., in the UK. He has over a hundred external publications on combustion, fuels and engine research. He received his BTech Degree from IIT Bombay (1972) and PhD from Bristol University, UK (1975) in Aeronautical Engineering. From 1975–1979 he did post-doctoral research in turbulent combustion at Southampton University, UK. He is a Fellow of the SAE and IMechE. He has been an Adjunct/part-time/Visiting Professor at KTH, Stockholm/Technical University and Eindhoven/Sheffield University and is on the editorial boards of the International Journal of Engine Research, Journal of Automobile Engineering and Journal of Fuels and Lubricants (SAE).

Cem Soruşbay has been a member of the Faculty of Mechanical Engineering, Istanbul Technical University since 1979 and chaired the Automotive Division for seven years. He received his BSc from the University of Manchester, UK (1975) and his PhD from Istanbul Technical University (1985). His research interest includes internal combustion engines and modelling of the combustion process. He has worked as a Scientist at the University of Sheffield, UK and the

ssssssClean Energy Research Institute in Florida, USA on conventional and alternative fuel technologies for IC engines. He is currently working on combustion modelling studies in relation to emission reduction and control of greenhouse gas emissions from transportation.

1 Introduction

This special issue of IJVD is devoted to the Fuels and Combustion in Engines Conference (FCE, www.fce.sakarya.edu.tr), which was held in Istanbul Technical University, Istanbul, Turkey in 2009. These conferences aim to exchange technical information and research results and promote research and education that will help to solve current and future challenges in fuels and engine combustion. After the success of first FCE in 2008, a subsequent FCE conference was held by Istanbul Technical University and Sakarya University in 2009. They attracted participants from universities, research institutes, government and industry.

Future FCE conferences will also be held in Istanbul, a city uniting two continents with different cultures and civilisations, from the ancient Greek, Roman, and Ottoman Empires to the modern Republic of Turkey. Thus, it has always played an important role as a city of culture and power in history.

We are pleased to invite you to join us as participants from academia and industry to take part and exchange knowledge in next FCE conferences.

The papers in this special issue were selected from extended version of authors' papers. The nine papers were selected for publication by the scientific committee, and authors were invited to submit their papers in IJVD format to be reviewed by the IJVD reviewers.

The first paper 'Gasoline partially premixed combustion: high efficiency, low NOx and low soot by using an advanced combustion strategy and a compression ignition engine' by Manente and his colleagues is concerned with a light duty engine Volvo D5 running with gasoline to achieve high efficiency, low NOx and low soot simultaneously. An advanced injection strategy injecting most of the fuel very early in the compression stroke and then, through the stratification created by the last injection, the combustion is triggered. Values of soot and NOx are reduced but the efficiency deteriorates because the hot areas of the combustion move closer to the wall.

The second paper, by Parlak et al., is concerned with dynamic characterisation of a vehicle magnetorheological shock absorber An MR shock absorber has been designed and tested, its dynamic behaviour has been modeled with the fully-parametric classical Bouc-Wen hysteretic model. The total damping force has been given as a function of the current excitation. Finally, the model has been verified against the experimental data giving good agreement.

The third paper 'Effects of the ınjectıon parameters and compressıon ratıo on the emıssıons of a heavy duty dıesel engıne', by Yilmaz et al., aims at understanding the effects of the injection parameters on the combustion process for a single cylinder of a nine-litre six cylinder diesel engine. A comparison has been made considering the performance of the engine for various configurations of compression ratio, injection timing, cone angle and bowl geometry. The results are widely in agreement qualitatively with the previous similar experimental and computational studies in the literature.

The fourth paper 'Effects of nanoparticle additive in the water-diesel emulsion fuel on the performance, emission and combustion characteristics of a diesel engine', by Basha and Anand, describes research results that revealed that a significant improvement in the engine performance and the reduction in harmful pollutants could be achieved as an effect of improved properties of diesel on using water emulsion and nanoparticles.

The fifth paper 'A comparative study of Al_2O_3 coated LHR engine characteristic using rice bran and mahua methyl ester as a fuel', by Musthafa et al., is concerned with using a nano material of Al_2O_3 as a ceramic layer in low heat rejection engine concepts for the first time. Experiments were conducted on single cylinder, four stroke, water cooled and direct injection diesel engine for uncoated engine and compared, indicating an increase in engine power and decrease in specific fuel consumption as well as significant improvements in exhaust gas emissions (except NOx) and smoke opacity in Al_2O_3 coated engine compared with that of the uncoated engine.

The sixth paper 'Application of Taguchi's methods to investigate factors affecting emissions of a diesel engine running with tobacco oil seed methyl ester', by Parlak et al., applied the Taguchi method to determine optimal catalyst type, engine speed and TSOME blends on exhaust emissions. The Taguchi design method revealed that choosing right catalyst and the blend rate are two important factors in the minimisation of pollutant emissions.

The seventh paper 'Reduction of NOx in gasoline engine exhaust on V-exchanged clinoptilolite', by Emıroglu et al., declared that, contrary to traditional three-way catalysts, high success is obtained in the removal of NOx with selective catalytic reduction catalysts with lean combustion conditions used in excess oxygen by obtaining a maximum conversion efficiency of 28% for V-NZ.

The eighth paper 'Performance of a homogeneous charge compression ıgnition engine fuelled with gasoline', by Soyhan, describes a model based on a Ricardo Hydra HCCI engine. Good qualitative agreement is found between the computations and the available experimental data. The performed numerical simulations predict the same trends; however, quantitative agreement is not very good because the shape of the real piston cannot be modelled in 0-D simulations.

The ninth paper 'Assessment of fuel magnetisation capacity to improve fuel economy and enhance performance in a four-stroke SI engine', by Kafafy et al., is concerned with the effect of fuel particle magnetisation on the overall performance of a four-stroke spark ignition engine. They have designed a set of experiments using the Mitsubishi 1.5L (4G15) spark ignition engine. In this study, it is shown that fuel particle magnetiser can enhance the overall performance of a typical SI engine.

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