
Editorial

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Biographical notes: M.R. Riazi is currently a Professor of Chemical Engineering at Kuwait University. He was previously an Assistant Professor at Pennsylvania State University (USA), where he also received his MS and PhD. He was also a Visiting Professor/Researcher at the following universities: Trondheim (Norway), Illinois (Chicago, USA), Wright State (Dayton, USA), Texas (Austin, USA), Sharif (Tehran, Iran) and McGill (Montreal, Canada). He has been consultant to several oil companies and research institutes worldwide. He has published extensively in the areas of petroleum and chemical technology. He is also the author of two book and has been awarded Diploma of Honour from the American Petroleum Association.

This is the third issue of the first volume of IJOGCT which includes 6 articles in the areas of reservoir engineering (2 papers), refining and processing (2 papers) and coal processing (2 papers). The next and last issue of the first volume will contain articles mainly in the areas of natural gas processing, emission control from refineries and fuel performance in combustion engines. Issue 4 of Volume 1 will be available in the Fall.

I am particularly indebted by the enthusiasms shown by the reviewers who accepted responsibility of reviewing articles in a timely manner and in particular those who were not associated with the journal. It was mainly due to the efforts by all reviewers that made it possible to release this issue on time. Quality of papers published in the first and inaugural issue was reflected by quick and positive evaluation of the journal by Chemical Abstract Service (www.cas.org) of the American Chemical Society and all abstracts of papers published in IJOGCT will be covered by CAS.

Crude oil prices have notched up record highs almost weekly for months and reached a new record high of more than 147 \$/bbl in July 2008. Crude oil price is now 100% higher than its price a year ago and more than 1000% higher than its price a decade ago. Although we do not see such increase in the price of natural gas (it increased from 5 to 11 \$/MCF over the past decade) but with increases in its consumption and demand most probably it will follow the same trend as crude oil in the future. For example the consumption of natural gas in the European Union is projected to increase from 440 to 625 MTOE by the year 2030 (www.eurogas.org). World consumption of natural gas is to increase from current level of 100 TCF to 170 TCF by the year 2030 as projected by the US Department of Energy (Energy Information Administration) and the world energy consumption will be increased by 50% by 2015. Most of the projected increases in natural gas and energy consumption will come from Non-OECD countries.

The world crude production reached 87.5 mb/d in March 2008 in comparison with 84.3 in July 2007, a 3.8% increase in the past eight month period. The production was 65 mb/d during 1997, a 34.6% increase over the past decade. It is projected that consumption of crude oil will reach to about 100 mb/d by 2015. In the meantime,

since 1980 production has exceeded oil discoveries steadily. Higher prices for crude oil and natural gas are expected to be the major drive for use of clean coal-fired plants in the future and its consumption is currently increasing an average of 2.2% per year. With recent increases in food prices and subsequent negative effect on biofuel production, future consumption of coal could even go above its current projected level.

Quality of produced oil is also in decline as future world average crudes will be heavier (more aromatics) and contain more sulphur than in the past. At the same time new regulations require production of fuels with less sulphur and aromatics. Since 2005, EU requires fuels with sulphur content of 10 ppm and in Sweden zero sulphur diesel with very low aromatics (less than 1 vol.%) is available in the market. Global environmental regulations require that even countries in other parts of the world that currently do not have such severe restrictions to produce the same quality fuels.

New regulations in many industrialised countries are forcing future plants to store greenhouse gases underground rather than releasing into air. For example Canada has set a target of reducing greenhouse gas emissions by 20% below the level of 2006 by the year 2020. It aims to cut emissions by 60–70% by mid-century as indicated by the Canadian Press. Nearly 93% of reported emissions from Canadian plants were carbon dioxide. Capture techniques are expensive and could drive up the cost of oil and gas. Refineries contribute to about 15% of carbon emission and in general fossil fuel users account for 55% of the emissions widely blamed for global warming. A paper in this issue and a follow up paper in the next issue deals with optimisation of refineries to increase fuel quality and reduce CO₂ emissions.

In light of the above scenario, significant amount of research activities in various areas of fossil type fuels are going on in the world today and we hope IJOGCT will be a forum to reflect some of these activities.