OMICS International
conferenceseries.com

Qincheng Bi et al., J Pet Environ Biotechnol 2015, 6:5
http://dx.doi.org/10.4172/2157-7463.C1.010

3rd World Congress on

Petrochemistry and Chemical Engineering

November 30-December 02, 2015 Atlanta, USA

Pyrolytic and properties of endothermic fuels in minichannels at temperatures up to 750°C

Qincheng Bi, Zhaohui Liu, Zhuqiang Yang, Jianguo Yan, Yong Guo, Hui Pan and **Song Feng**
Xi'an Jiaotong University, China

Endothermic fuel is used as a coolant in regeneratively cooled vehicles. The fuel pyrolysis should persist for relatively long periods in minichannels and cause no significant coke deposition. Experimental platform has been constructed to investigate the heat transfer characteristics, pyrolytic and coking characteristics, and thermal physical and chemical properties of endothermic hydrocarbon fuels. Different flow passage structures are involved in the range from single circular minichannels and two-parallel minichannels for fundmental researches, to multi-minichannel plates for industrial applications. The platform works at mass flow rate in a range of 0.1 mL/min to 100 g/s with a heating power capacity of 1.4 MW. The thermodynamic properties include heat sink, density and specific heat were experimentally measured at temperatures up to 750°C. The transport propeties include viscosity and heat conductivity were measured at temperature up to 400°C, but higher temperature up to 800°C are expected to be realized effortfully in the future. The evaluation of deposition propensities of different endothermic fuels in minichannels were conducted at thermal cracking and catalytic cracking conditions in different flow passage structures. Flow maldistribution in parallel multi-channels was a significant problem to be solved to realize the full utilization of endothermic fuel's cooling capacity. Overall, a large-scale experimental platform for the R&D of regeneratively cooling structures has been developed in our laboratory.

Biography

Qincheng Bi has completed his PhD in 2000 from Hong Kong University of Science and Technology. He is now a Professor in State Key Laboratory of Multiphase Flow in Power Enginnering in China. He has published more than 100 papers in reputed journals.

qcbi@mail.xjtu.edu.cn

Notes: