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**Title** **New Dimensions and Directions in Alternative Fuels, Energy and Environment**

**Abstract** The humanity has been facing critical challenges due to the increased energy and environmental problems and the need for sustainable future. Three key domains, such as clean (alternative) fuels, renewable energy and cleaner technologies for better environment and sustainable development, have been attracting the greatest attention worldwide. This presentation will make its focus on these three vital subjects and provide the dimensions and future directions in these subjects with specific features, ranging from hydrogen and ammonia technologies as carbon free solutions to renewable fuels such as synthetic methanol, ethanol and DME; renewable energy technologies, ranging from solar to geothermal energy options; and cleaner technologies for conventional fossil fuels-based systems and applications. Furthermore, this presentation will make a prime focus on newly-developed multi-purpose integrated energy generating systems and their performance assessments through energy and exergy efficiencies as well as other newly developed performance parameters and criteria. Moreover, novel system design, analysis, assessment and improvement options will be discussed. Various parametric studies will be presented to highlight the importance of new energy systems and mindset change when it comes to more efficient and effective and environmentally-benign operations. There will be some life cycle assessments studies presented for comparative evaluations of fuels and energy options. In closing, there will be a general discussion about carbon-free society and its complications as well as future directions in alternative fuels, energy and environment.

**Bio-sketch** Ibrahim Dincer is a full professor of Mechanical Engineering at University of Ontario and adjunct professor at Faculty of Mechanical Engineering of Yildiz Technical University. Renowned for his pioneering works in the area of sustainable energy technologies he has authored/co-authored numerous books and book chapters, and many refereed journal and conference papers. He has chaired many national and international conferences, symposia, workshops and technical meetings. He has delivered many keynote and invited lectures. He is an active member of various international scientific organizations and societies, and serves as editor-in-chief, associate editor, regional editor, and editorial board member on various prestigious international journals. He is a recipient of several research, teaching and service awards, including the Premier's research excellence award in Ontario, Canada. During the past five years he has been recognized by Thomson Reuters as one of The Most Influential Scientific Minds in Engineering and one of the most highly cited researchers.