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Presentation Title

Hydrogen Peroxide Revisited: the Role as an Energy-Saving Combustion Enhancer and a Non-Toxic Green Propellant for Satellites and Hybrid Rockets

Abstract: In this talk, the effects and applications of hydrogen peroxide in research areas of combustion, energy and propulsion are revisited and reviewed, especially its role as an energy-saving combustion enhancer and a non-toxic green propellant for satellites and hybrid Rockets. Recently, the research on hydrogen peroxide has been re-emphasized due to the stronger demand for cleaner energy and non-toxic environmental green propulsion. The current results, status, difficulties and challenges of hydrogen peroxide research in combustion, energy and propulsion are reviewed and discussed. The feasible new applications of hydrogen peroxide in energy and propulsion for industry and space technology development are proposed, exclusively, as the combustion enhancer for biomass and the green propellant for satellite and hybrid rockets.

Short CV

Prof. Yei-Chin Chao received his Ph.D. degree from School of Aerospace Engineering, Georgia Institute of Technology, USA in 1984. Since then, Dr. Chao has been affiliated with Department of Aeronautics and Astronautics of National Cheng Kung University (NCKU). He is now a NCKU Chair Professor since 2017, and a Distinguished Professor since 2002. His research has been in the areas of combustion, propulsion, diagnostics, thermal and fluid flow, and acoustics. He received several national and international awards, including the TECO award, Taiwan, and the Russel Severance Springer Professorship from University of California at Berkeley, USA. He published more than 350 technical articles in well-

established journals and conferences. He served as Department Chairman during 2001-2004 and Director of Aerospace Science and technology Research Center (ASTRC), NCKU during 2004-2011. He also served as the Chairman of the Aerospace Research Program of National Science Council (NSC) in Taiwan during 2008-2011. He was the president of the Combustion Institute, Chinese Taipei Section during 2004-2008. He also served as a Member of the Board of Directors of Institute of Dynamics of Explosion and Reactive Systems (IDERS) during 2007-2015. He is currently Associate Fellow of AIAA and Fellow of Aeronautic and Astronautic Society of ROC. He currently serves on the Editorial Board of Combustion and Flame.