Grand Technion Energy Program
תוכנית האנרגיה ע"ש גרנד

Technion Israel Institute of Technology

תכנית האנרגיה ע"ש גרנד מתכבדת להזמינך להרצאה סמינריונית שתינתן ע"י:

בת- חן אברהם

התכנית הבין-יחידתית לאנרגיה

בנושא:

Thermochemical analysis of combustion of biofuels and comparison to fossil fuels

Biofuel is suggested as an alternative energy source. Biofuel is renewable, produced from plants or animal fat, hence biodegradable, non-toxic, sulfur and carcinogenic benzene free and most importantly, can reduce pollutant and global CO2 emissions. The main purpose of this research is a comparison between biofuels and fossil fuels aimed to determine whether biofuels provide benefits over fossil fuels and to understand the impact of replacing the use of fossil fuels with biofuels. Investigation of fundamental parameters such as composition, pollutants and by-product emissions, combustion temperature, spray characteristics and combustion efficiency is of a great importance .

Two biofuels: Biodiesel and bio-synthetic paraffinic kerosene (bio-SPK) are compared with two fossil fuels: diesel and kerosene, respectively .

The methods for this research are both theoretical and experimental :

Theoretical analysis using CHEMKIN-PRO, which enables simulation of chemical kinetics of complex reactions with multiple compounds. Ignition delay and adiabatic flame temperature of both biofuels and fossil fuels are investigated using CHEMKIN-PRO .

Experimental analysis methods are employed in the form of spray characteristics and fuel combustion:

- Spray atomization has a significant role on combustion engine performance and emissions, hence quantitative measurement of the atomization performance is of great concern. Spray characteristics experiment is performed to measure the droplet size distribution, the average Sauter mean diameter (SMD) and to develop a new SMD to fuel pressure correlation .
- Combustion experiments have a major importance for detection and characterization of the combustion products to verify the impact of using biofuels. Combustion experiments are executed to measure combustion temperatures and efficiencies measurements and gas analysis in order to measure the emitted gases.

מנחה : פרופ' ישעיהו לוי, הפקולטה להנדסת אווירונוטיקה וחלל.

במסגרת עבודת מחקר לתואר מגיסטר

ההרצאה תתקיים ביום ד' 11.2.15 בשעה 15:00, חדר סמינרים, קומה 3, בניין הפקולטה להנדסה כימית ע"ש וולפסון.

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