Infrared spectrum study of MOLETECH activated gasoline

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The study of molecular level change of commercial gasoline by MOLETECH FUEL SAVER DEVICE by the FTIR spectrum

Instrumental:

Fourier Transfer Infrared Spectrometer (FTIR), Bio-Rad spectrometer, FTS155/165 Win-ir

Material:

Gasoline, commercial gasoline from CPC gas station, grade 95.

A MOLETECH FUEL SAVER DEVICE provided by POJERY TRADING CO., LTD

Experimental Procedures and Results:

Two FTIR spectrums were obtained with following operative parameters: Transmission mode, scanning resolution: 16, Scanning range: from 400 to 4000 cm^{-1}. The samples were the as-purchased 95 gasoline and MOLETECH FUEL SAVER DEVICE M01027 pack treated 95 gasoline. After obtaining these two spectrums, a subtraction was performed. The spectrum of as-purchased gasoline was subtracted from that of the treated one. The difference of the two spectrums was shown in Figure 1. Clearly seen the three regions of the spectrum were changed. The main one, from 2850 to 3050 cm^{-1}, representing the absorption of the CH of the saturated and unsaturated hydrocarbon. According the research paper by Wei et al (1), the ceramic powder absorbed the thermal energy from its surrounding environment and released this thermal energy in the specific wavelength, i.e. from few micron to 20 microns (from 2900 to 3300 cm^{-1} in wave number). This specific energy was in the concert with the van de wall force between the gasoline molecules. Hence, the intermolecular van de wall force was broken, resulting the change of aggregation of gasoline molecules from cluster to single molecule. This transfer changed several properties of the sample, such as surface tension (2) and flash point. The surface tension of the treated gasoline

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was decreased; causing the smaller droplets of the gasoline after it was ejected from the nozzle. The smaller droplets, exposing larger surface area in the air, contact with oxygen for better combustion reaction, in term, better fuel efficiency (3).

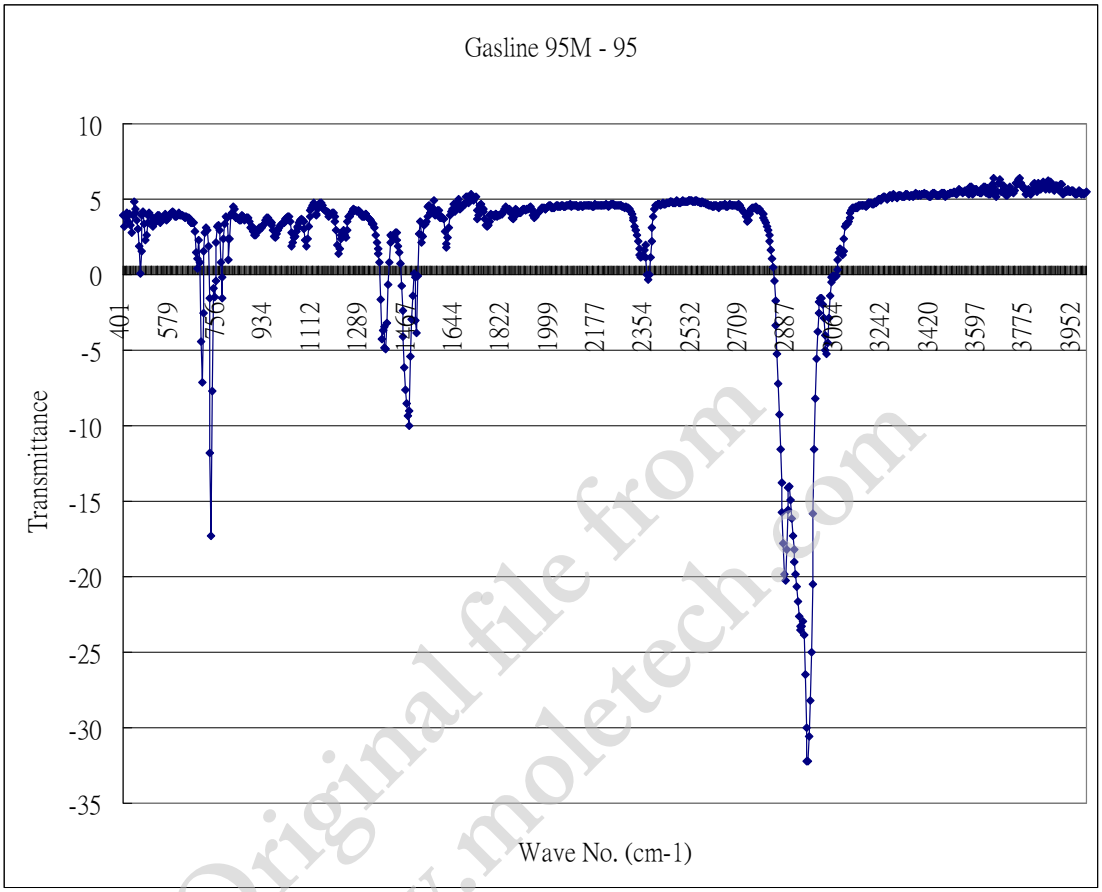

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Figure 1. The subtracted FTIR spectrum of the ceramic treated gasoline

Conclusion:

Based on this FTIR study, we conclude that MOLETECH FUEL SAVER DEVICE, such as the one provided by POJERY TRADING CO., LTD can modify the properties of the commercial gasoline. These properties change was due to the change of molecular aggregation of gasoline from larger cluster to smaller cluster or even to single molecule, by breaking down the intermolecular van de wall force between the gasoline molecules. Along with other experimental data and several research papers, it is reasonable to see the fuel efficiency of the treated gasoline improved.

Reference:

1. Wei, Qingtang et.al, 2002, p24-28.
2. Pan, Yanfen et.al, Journal of The Chinese Ceramic Society, Vol 34, No. 5. 2006.
3. Chen, Lingshan et. al, Vol34, No. 5, Oct. 2005, P24-26

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