

## **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  $\text{cm}^{-1}$ . 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  $\text{cm}^{-1}$ , 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  $\text{cm}^{-1}$  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

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).

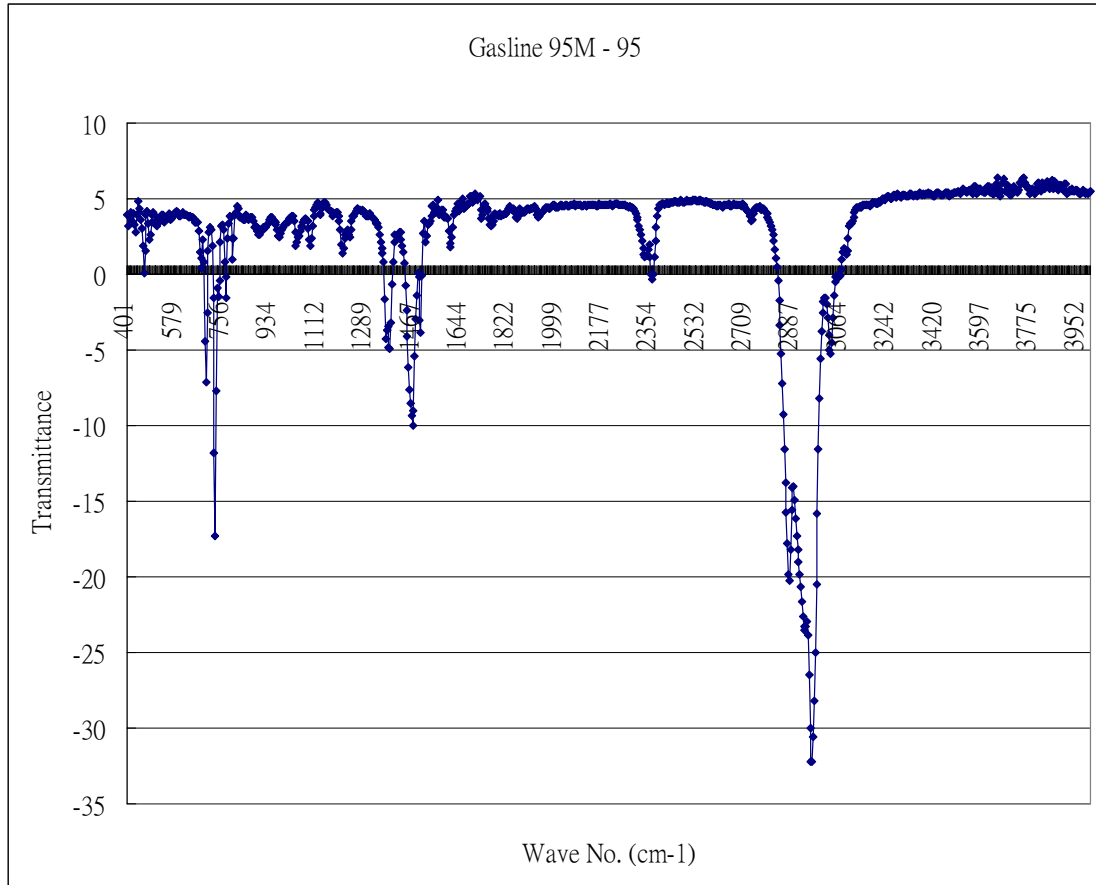


Figure 1. The subtracted FTIR spectrum of the ceramic treated gasoline

#### 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