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Detection of petrol adulterant pattern recognition through computational techniques

Nagamani M[1], Vimal Babu U[1] and **Ramakrishna M[1, 2]**
[1]University of Hyderabad, India
[2]VFSTR University, India

Gasoline (Motor Spirit/MS) and Diesel (High Speed Diesel/HSD) are major fuels used for transport/ Electricity generation universally. Consumers are facing the threat of fuel adulteration. Adulterants are added to these fuels with other cheaper boiling point range hydrocarbons having more or less similar composition leading to alter and degrade the quality of the base fuels. These adulterants are added by the business community for their monetary gains. Detecting such adulterant in fuels is a foremost task in the interest of the end consumer. To check, control the adulterants both in Diesel and Gasoline there shall be perfect mechanism both at laboratory level as well as at statutory level. One such method to analyze the fuel adulteration is Statistical methods for Multi Variant data Analysis(MVA) and Modeling them using ANN to model to check such adulterants and their behavior with different experiments analyses using Fourier Transform based system One of the most power ful technique used for analysation of the data is Principle Component Analysis which the core technique applied to understand the petrol adulterants, which is also an accurate method than any other existing methods. PCA is used to extract the important information from a multivariate data table and to express this information as a set of few new variables called principal components. PCA is to identify directions along which the variation in the data is maximal. PCA reduces the dimensionality of a multivariate data to two or three principal components that can be visualized graphically, with minimal loss of information.

manidcis@gmail.com