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ANALYTICAL METHODS FOR LUBRICANT QUALITY CONTROL IN ENGINES

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ABSTRACT

Identification of oil degradation in turbo machines and automobile industry is a huge problem which has been prevailing from past decades up to now. Various types of researches have conducted to overcome this matter. In this research work several used wind turbine gear oil samples were analyzed using UV-Visible spectroscopy, Fourier-transform infrared spectroscopy (FTIR) and Fluorescence Spectroscopy methods. In accordance with the graphical analysis of the spectra of three spectroscopic methods, fluorescence data give strong and distinct signals rather than other two methods. Several motor oil samples which were subjected to artificial aging at the laboratory conditions by heating them up to different temperatures for different time periods were analyzed with Fluorescence spectroscopic method. Clear variation of fluorescence emission intensities in each spectrum was observed with the oil age. Results show that Fluorescence spectroscopic method can be used as a good analytical tool to identify oil degradation. So this method can be optimized as novel potential sensor to detect oil quality.

Keywords: Lubricant oil, Oil degradation, Fluorescence spectroscopy, Analysis of lubricant oil, Identification of oil degradation