

Surface plasmon resonance determination of methanol concentration during alkaline transesterification

ABSTRACT

A surface plasmon resonance (SPR) method was applied to determine the methanol concentration during an alkaline transesterification of the mixture of palm oil and methanol. Theoretically, an SPR signal resonance angle relates with the refractive index of the mixture. Experimental data showed a resonance angle by way of refractive index depends on each volume percentage of palm oil, methanol, and methyl ester. The optimized percentages of volume concentration are found to be 12% methanol and 88% palm oil. At the present measurement precision, it resulted in 2% excess unutilized palm oil or methanol in the biodiesel mixture.

Keyword: SPR; Biodiesel characteristics; Optical properties; Methanol; Palm oil