

## Dielectric spectroscopy on mixture of rice husk, rice husk ash and rice bran from 4 Hz to 1 MHz

### ABSTRACT

In this study, mixtures of rice husk/rice husk ashes (RHA) with RB on different ratios were prepared. Dielectric permittivity ( $\epsilon'$ ), loss factor ( $\epsilon''$ ) and AC conductivity ( $\sigma'$ ) were measured in the frequency range of 4 Hz to 1 MHz in ambient temperature. Results for mixture of RHA and RB indicate that a dipolar relaxation occurring between 103 - 105 Hz and the peak is depressed and shifted to lower frequency as the RB content increases in the mixture. Moreover, AC conductivity decreases as the RB content increase. This may attributed to production of natural oil content from RB. In contrast, a dielectric characteristic for RH is generally not affected by the RB contents. This study explore dielectric characteristic of mixture between RH/RHA and RB in low frequency range because lack of literature is reported on low frequency response. Additionally, the potential application of RH/RHA and RB could be explored in effort to diminish waste disposal and enhance environmental protection.

**Keyword:** Rice husk; Rice bran; Dielectric permittivity; Dielectric loss factor; Frequency