Therefore insulation property of the epoxy has been improved by the addition of filler. Similar work has been done by other researcher in which dielectric constant is found to be increase on the addition of filler [11]

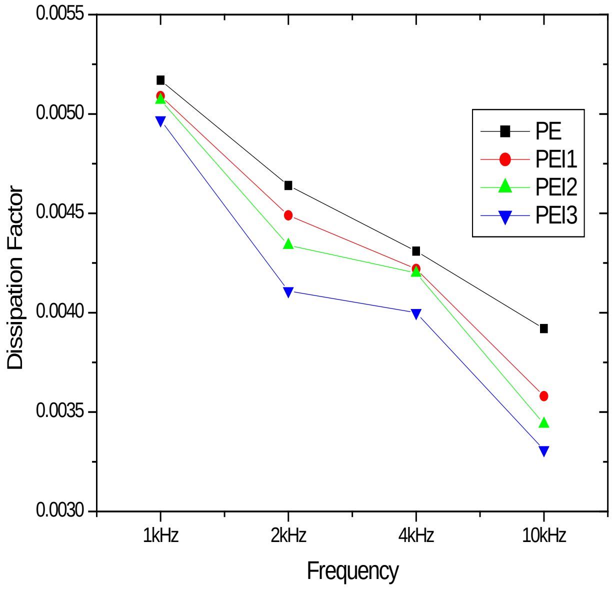

Figure 5 (b): Variation of dissipation factor for pure epoxy and chemically treated coir fibre reinforced epoxy composites measured at 1kHz,2kHz,4kHz and10 KHz.

From Figure 5(b) it is clear that dissipation factor decreases on increasing the frequency as well as on increasing the concentration of filler. The decrease in dissipation factor in chemically treated coir fibre reinforced epoxy composite probably due to low electrical conductivity in the filler. Comparable similarity has been shown by other scholars [12, 13].

Further, the Figure 6 shows the variation of Ac Conductivity values at room temperature for different frequencies (1 KHz, 2 KHz, 4 KHz and 10 KHz) of all prepared samples. It is found that Ac conductivity of pure epoxy is lower than that of chemically treated coir fibre reinforced epoxy composites. On the other hand there is an increase in ac conductivity in increasing the frequency. The conductivity, permittivity and dielectric loss values depend upon the thickness, composition and concentration of filler. Hopping of charge carrier above electronic polarization is the major factor responsible for the increase in Ac conductivity with an increase in frequency and increase in filler concentration [14].

It has been found from Figure 6, that the AC conductivity of chemically treated coir fibre reinforced epoxy composite is more than the pure epoxy composite at all frequencies due to the presence of chemically treated coir fibre in the pure epoxy composite.

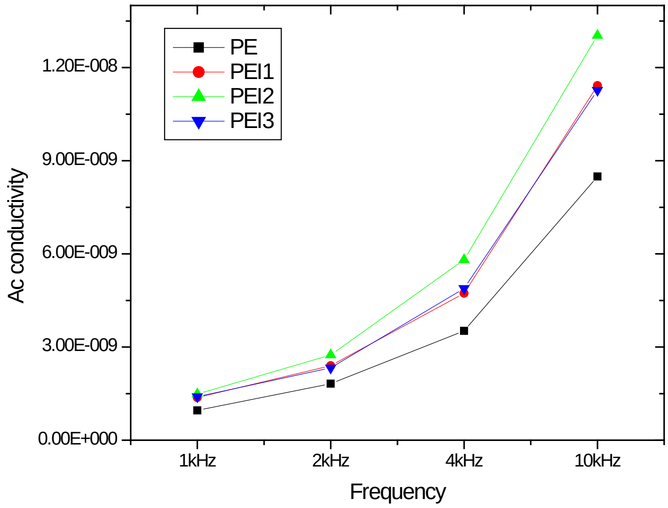

Figure 6: Variation of AC conductivity (σ_{ac}) for pure epoxy and chemically treated coir fibre reinforced reinforced measured at 1kHz,2kHz,4kHz and 10 KHz.

Finally, all the measured electrical properties i.e. the dielectric constant (e_0), dissipation factor and AC conductivity (σ_{ac}) by using the artificial neural networking (ANN) model simulation were observed in the same pattern as it has been shown in Figure 5-6. Therefore, the simulated data by ANN model for such electrical properties are in good agreement with the present experimental data / samples and also confirm the considerable advantages of the composite material / coconut coir fibre.

6. Conclusions

As the result, the paper studies important key points relating to the electrical properties of coir fiber reinforced epoxy composites based on the chemical treatment. This study deals with the preparation of chemically treated coir fibre reinforced epoxy composites with some new modification methods. Finally based upon the present study one can conclude the following:

The increase of coir fibres will make the composite tend to have low stiffness and ductility. On mixing in epoxy resin and treated produce inhomogeniety but possess hardness.

It has been found that the dielectric constant decreases depending on the reinforcement substance and the type of reinforcement.

The AC conductivity found to increase on increasing the concentration of filler

The dielectric loss ($\tan\delta$) were found to be decreased with the amalgamation of the treated coir fibre.

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