









**Figure 6:** Variation of  $\tan \delta$  as a function of  $\log f$  For  $y\text{LSMO} + (1-y) [0.50\text{BCT}-0.50\text{BZT}]$  composites

#### 4. Conclusion

It is observed that the hydroxide co-precipitation and ceramic routes could be successfully used to form nano particles of the LSMO and (BCT-BZT). The  $y\text{LSMO} + (1-y)[0.50\text{BCT}-0.50\text{BZT}]$  composites synthesized by ceramic route. The XRD spectra of the composites show that it is phase pure and possesses two separate phases. From SEM image it is seen that the composite is compact microstructure. From dielectric properties it is observed that interfacial polarization prominent at low frequencies. From variation of the loss tangent with frequency it is observed that  $\tan \delta$  passes through a resonance peak. The resonance occurs at the frequency where the time required for the charge to transfer across the interface matches with reciprocal of applied frequency.

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