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**A novel Graphene Oxide film: Synthesis and Dielectric properties** BETUL CANIMKURBEY, SAIT EREN SAN, Gebze Technical University, MUHAMMAD YASIN, National University of Science and Technology, MUHAMMET ERKAN KSE, Gebze Technical University — In this work, we used Hummers method to synthesize Graphene Oxide (GO) and its parallel plate impedance spectroscopic technique to investigate dielectric properties. Graphene Oxide films were coated using drop casting method on ITO substrate. To analyze film morphology, atomic force microscopy was used. Dielectrics measurements of the samples were performed using impedance analyzer (HP-4194) in frequency range (100 Hz to 10MHz) at different temperatures. It was observed that the films' AC conductivity  $\sigma_{ac}$  varied with angular frequency,  $\omega$  as  $\omega^S$ , with  $S < 1$ . The electrical properties of GO showed changes depending on both frequency and temperature. We observed GO film contains direct current (DC) and Correlated Barrier Hopping (CBH) conductivity mechanisms at low and high frequency ranges, respectively. Using solution processed Graphene Oxide will provide potential for organic electronic applications through its photon absorption and transmittance capability in the visible range and excellent electrical parameters.

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