Keywords: **DFT calculation, Schiff bases, Corrosion inhibitors**
Faculty of Science
Department of Chemistry
Name: Mohamed Hani Ahmed Fouad Shaaban

Title. Electrical conductivity of silver bismuth borate tellurite glasses

Authors: A.A. Ali, M.H. Shaaban

Published in: Physica B 403 (2008) 2461–2467

Impact Factor: 0.822

Abstract:

The AC electrical conductivity of $(Ag_2O)x$ $(Bi_2O_3)30$ $(B_2O_3)60$ - x $(TeO_2)10$ glass (x = 0, 2, 4, 5, 10, 15 and 20) were measured at different temperatures and frequencies. The results obtained indicated that glasses containing silverо5 mol% have values nearly approximately equal to AC electrical conductivity. A slight decrease was observed with increasing Ag2O concentration up to 4 mol%. However, the AC electrical conductivity values increase with increasing silver content, i.e. X5 mol%. The AC electrical conductivity values, increased with increasing frequency and follow the

power law, $\sigma_{AC} = A\omega^s$. The frequency exponent s was found to be dependent

on frequency and temperature. The s values tended to increase to unity as the temperature decreased. Such results suggest that the correlated barrierhopping (CBH) model is appropriate for explaining the AC electrical conductivity in these glasses. A pronounced increase in the dielectric loss values was observed with increasing silver content. These reflect the effect of Ag+ ions charge carriers on the electrical conductivity of such glasses.

Keywords: Conductivity; Silver bismuth borate tellurite; Glasses