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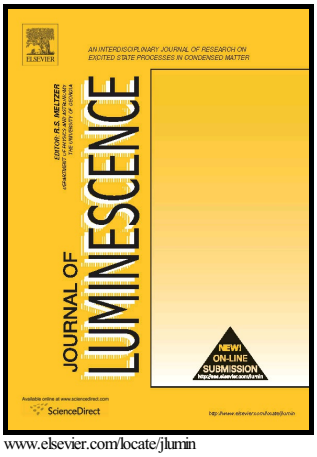
H.M. Zeyada, M.I. Youssif, N.A. El-Ghamaz, M.A. Nasher



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H.M. Zeyada[a], M.I. Youssif[a], N.A. El-Ghamaz[a], M.A. Nasher[a,b,*]

[a] Department of Physics, Faculty of Science, Damietta University, New Damietta 34517, Egypt

[b] Department of Physics, Faculty of Science at Sadah, Amran University, Yemen

[*]Corresponding author. Email: muneerkhabi2017@gmail.com

Abstract

In this work, thin films of Toluidine blue (TB) have been prepared by thermal evaporation technique. The obtained films have been characterized using differential scanning calorimetry (DSC), atomic force microscope (AFM), UV-Vis.-NIR spectroscopy and electrochemical impedance spectroscopy (EIS). The thermal analysis has showed the morphological stability TB thin films over wide range of temperatures reaches up to 478 K. Further, the AFM images have revealed that the roughness of TB films have increased upon annealing process. Optical constants of TB films were calculated from the transmittance and reflectance measurements, in the spectral range from 200 to 2500 nm. The results have indicated that the type of electronic transition is direct forbidden and the values of energy bandgaps are temperature independent. AC-conductivity has been analyzed in the frequency range 0.2 - 3500 kHz and in the temperature range 303- 453 K. In this context, the charge carriers transport has been interpreted in terms of the correlated barrier hopping mechanism.