

عنوان مقاله:

Comparative study of behavior of electrical conductivity in KI–Al₂O₃ and KI–TiO₂ heterostructure composites

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خلاصه مقاله:

AbstractThe present work reports development of binary KI–Al₂O₃ and KI–TiO₂-based nanocomposites using simple solid-state reaction method and is characterized by X-ray diffraction, Fourier-transform infrared spectroscopy, scanning electron microscopy and impedance spectroscopy. The results show the effect of heterogeneously doped Al₂O₃ and TiO₂ on the ionic conductivity of pure KI which is moderately conductive. The results supported the composite development in which the interface layer portrays a significant part in governing the bulk properties of the compound. Improvement in electrical conductivity is seen in the incorporation of Al₂O₃ and TiO₂ dispersoid into the matrix of KI. With temperature, electrical conductivity increased and the activation energies were found to be decreasing. The activation energies for KI–Al₂O₃ and KI–TiO₂ systems were 0.22 eV and 0.21 eV, respectively, in the temperature range 20–400 °C. Dielectric constant increases with the increase in temperature in the entire temperature range studied .attributed to the phenomenon of distortion of electric charges

کلمات کلیدی:

Solid composites, x, ray diffraction, Impedance spectroscopy, Ionic conductivity, Dielectric constant

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