



On the direct current electric conductivity and conduction mechanism of some stable disubstituted 4-(4-pyridyl)pyridinium ylides in thin films

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ISSN	0040-6090
Résumé en anglais	<p>Temperature-dependent d.c. electric conductivity of some recently synthesized organic compounds, stable disubstituted 4-(4-pyridyl) pyridinium ylides, is studied. Thin-film samples ($d = 0.100.80 \mu\text{m}$) spin-coated from dimethylformamide solutions onto glass substrates have been used. Organic films with reproducible electron transport properties can be obtained if, after deposition, they are submitted to a heat treatment within temperature range of 297 - 527 K.</p> <p>The studied polycrystalline compounds exhibit typical n-type semiconductor behavior. The activation energy of the electric conduction ranges between 0.59 and 0.94 eV.</p> <p>Some correlations between semiconducting parameters and molecular structure of the organic compounds have been discussed.</p> <p>In the higher temperature range ($T > 400 \text{ K}$), the electron transport in examined compounds can be interpreted in terms of the band gap representation model, while in the lower temperature range, the Mott's variable-range hopping conduction model was found to be appropriate.</p> <p>Some of the investigated compounds hold promise for thermistor applications.</p>
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