



Thermogravimetric Analysis of Copper(II) Thiourea Complex Derived from Sesame (*Sesamum indicum*) Oil

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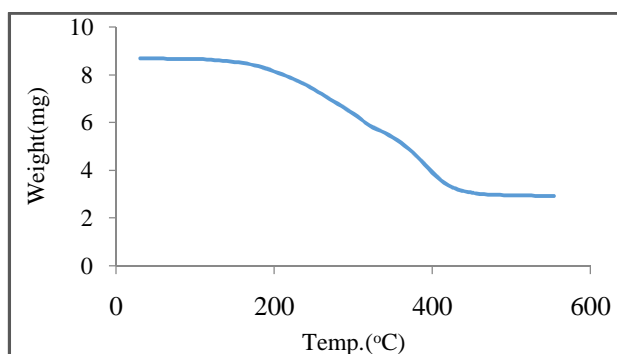
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Accepted on 5th November, 2018

ABSTRACT

Copper (II) soap complex was synthesized with N and S containing ligand and characterized by elemental analysis, IR, NMR and ESR spectral techniques. TGA technique has been applied to Copper (II) sesame thiourea complex for its thermal analysis and evaluation of activation energy. Thermodynamic parameters such as heat of dissociation ΔH , change in free energy ΔG and entropy ΔS were evaluated for the different steps of degradation using the integral method of Coats-Redfern. The results of thermogravimetric analysis reveal that copper (II) thiourea complex undergo stepwise thermal degradation of saturated, unsaturated fatty acid components of edible oils. In the thermal decomposition of the copper (II) soap complex, the various steps involved have been analyzed by Coats-Redfern equation, Broido equation, Horowitz-Metzger equation and Piloyan-Novikova equation for evaluating kinetic parameters. It has been observed that for all the equations applied, the stepwise energy of activation follows the order –Step III>Step II > Step I. Thermodynamic parameters such as heat of dissociation ΔH , change in free energy ΔG and entropy ΔS were evaluated for the different steps of degradation using the integral method of Coats-Redfern and other equations.

Graphical Abstract



TGA of copper(II) sesame thiourea complex at 10 degree

Keywords: Copper(II) sesame thiourea complex, TGA, Energy of activation, Kinetic parameters, Thermodynamic parameters.