



## Infrared, X-rays Diffraction and Thermal Studies of Chromium soaps

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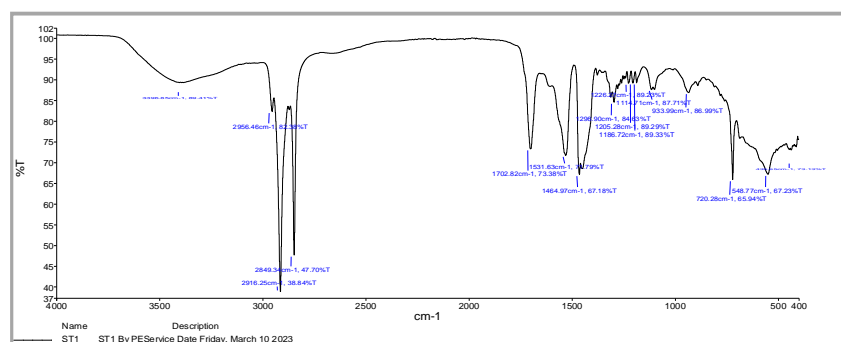
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### ABSTRACT

The physicochemical characteristics of chromium soaps (myristate, palmitate, and stearate) were evaluated in the solid state using the infrared spectroscopic technique, thermal and X-ray diffraction Analysis to find out the structure of Chromium soaps. IR results reveal that the fatty acid exists with a dimeric structure through intermolecular hydrogen bonding between two molecules of fatty acids whereas the metal-to-oxygen bonds in chromium soaps (myristate, palmitate, and stearate) were ionic in nature. The X-ray diffraction measurements confirm that these soaps possess a double-layer structure with long posing. The results of the thermogravimetric analysis reveal that the decomposition process of these soaps is of zero order and the energy of activation for the decomposition process lies in the range of 18.75, and 32.33  $\text{KJmol}^{-1}$ .

### Graphical Abstract:



Infrared Absorption spectrum of Chromium Stearate.

**Keywords:** IR Spectra, X-ray diffraction, Chromium (myristate, palmitate, and stearate).