

ABSTRAK

KAJIAN TERMODINAMIKA SENYAWA KOMPLEKS Co(II)- *Methyl Orange* DENGAN METODE *KISSINGER* DAN *COATS-REDFERN*

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Telah dilakukan sintesis senyawa kompleks Co(II)- *methyl orange* untuk dilakukan peninjauan termodinamika. Karakterisasi senyawa kompleks hasil sintesis dilakukan dengan identifikasi dekomposisi senyawa dengan DTA-TGA, dan penentuan struktur senyawa kompleks dengan XRD. Sintesis senyawa kompleks dilakukan dengan cara kondensasi refluks menggunakan pelarut etanol, menghasilkan padatan berwarna orange kecoklatan dengan rendemen sebesar 71,3%. Padatan yang diperoleh kemudian di karakterisasi menggunakan DTA-TGA dan XRD. Berdasarkan hasil karakterisasi menunjukkan terbentuknya senyawa kompleks Co(II)- *methyl orange*. Hasil yang didapatkan pada pengujian menggunakan alat DTA-TGA senyawa kompleks Co(II)- *methyl orange* mengalami tiga kali dekomposisi. Teori termodinamika Coats-Redfern dan Kissinger menandakan reaksi berlangsung secara *chemisorption*. Karakterisasi pada XRD menunjukkan bahwa padatan yang dihasilkan dari sintesis senyawa kompleks Co(II)- *methyl orange* berbentuk amorf.

Kata kunci: Coats-Redfern, Kissinger, Kobalt (II), *methyl orange*, senyawa kompleks

ABSTRACT

THERMODYNAMICS STUDY OF Co(II)-*Methyl Orange* COMPLEX WITH KISSINGER AND COATS-REDFERN METHODS

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Synthesis of the complex compound Co(II)- methyl orange has been carried out for thermodynamic review. The characterization of the synthesized complex compounds was carried out by determining the yield of the synthesized compounds, identifying the decomposition of the compounds with DTA-TGA, and determining the structures of the complex compounds with XRD. The synthesis of complex compounds was carried out by means of reflux condensation using ethanol solvent, resulting in a brownish orange solid with a yield of 71.3%. The obtained solids were then characterized using DTA-TGA and XRD. Based on the results of the characterization showed the formation of a complex compound Co(II)- methyl orange. The results obtained in the test using the DTA-TGA tool, the Co(II)-methyl orange complex compound underwent three decomposition. Coats-Redfern and Kissinger's thermodynamic theory indicates that the reaction proceeds by chemisorption. Characterization on XRD showed that the solid produced from the synthesis of the Co(II)- methyl orange complex was amorphous.

Keywords: Coats-Redfern, Cobalt(II), Complex Compound, Kissinger, *methyl orange*.