

## ABSTRAK

### PENGARUH VARIASI WAKTU PEMANASAN SINTESIS PERAK NITRAT ( $\text{AgNO}_3$ ) MENGGUNAKAN METODE REDUKSI KIMIA

Oleh

MUHAMMAD RIZKI

Sintesis perak nitrat menggunakan metode reduksi kimia dengan variasi waktu pemanasan selama 1 jam, 2 jam dan 3 jam telah berhasil dilakukan. Penelitian ini bertujuan untuk mengetahui pengaruh variasi waktu pemanasan terhadap struktur fasa, konsentrasi kandungan unsur, morfologi, dan persentase massa unsur. Proses sintesis dilakukan dengan memanaskan campuran perak dan asam nitrat pada suhu  $T = 85\text{ }^\circ\text{C}$  selama 1 jam, 2 jam, dan 3 jam, kemudian dilakukan proses evaporasi pada suhu  $T = 125\text{ }^\circ\text{C}$  selama 10 menit. Hasil analisis XRF pada sampel  $\text{AgNO}_3$  menunjukkan perbedaan persentase konsentrasi Ag, dengan persentase konsentrasi Ag terbesar yang dihasilkan yaitu 98,839% pada variasi waktu pemanasan 2 jam. Unsur pengotor pada hasil XRF sampel  $\text{AgNO}_3$  memiliki konsentrasi yang lebih dari 1%, dengan konsentrasi unsur pengotor terbesar yaitu tembaga (Cu). Hal ini yang menyebabkan sampel hasil sintesis berwarna biru. Hasil analisis XRD menunjukkan fasa  $\text{AgNO}_3$  memiliki struktur *orthorombic*, dengan persentase fasa  $\text{AgNO}_3$  terbesar yang dihasilkan yaitu 27,85% pada variasi waktu pemanasan 2 jam. Hasil analisis SEM-EDS sampel  $\text{AgNO}_3$  pada variasi waktu pemanasan selama 2 jam menunjukkan sampel mengalami aglomerasi dengan ukuran butir (21,59-120,1  $\mu\text{m}$ ), serta persentase massa 92,68%.

Kata kunci:  $\text{AgNO}_3$ , perak, asam nitrat, XRF, XRD, SEM-EDS.

## **ABSTRACT**

### ***EFFECT OF SILVER NITRATE ( $\text{AgNO}_3$ ) SYNTHESIS OF HEATING TIME VARIATION USING CHEMICAL REDUCTION METHOD***

**By**

**MUHAMMAD RIZKI**

*Synthesis of silver nitrate using the chemical reduction method with variations in heating time for 1 hour, 2 hours and 3 hours has been successfully carried out. This study aims to determine the effect of variations in heating time on the phase structure, elemental concentration, morphology, and mass percentage of elements. The synthesis process was carried out by heating a mixture of silver and nitric acid at  $T = 85\text{ }^\circ\text{C}$  for 1 hour, 2 hours and 3 hours, then the evaporation process was carried out at  $T = 125\text{ }^\circ\text{C}$  for 10 minutes. The results of the XRF analysis on the  $\text{AgNO}_3$  samples showed differences in the percentage of Ag concentrations, with the largest percentage of Ag concentrations produced, namely 98.839% at 2 hours of heating time variation. The impurity element in the XRF results of the  $\text{AgNO}_3$  sample has a concentration of more than 1%, with the largest concentration of the impurity element, namely copper (Cu). This causes the synthesized sample to turn blue. The results of the XRD analysis showed that the  $\text{AgNO}_3$  phase had an orthorhombic structure, with the largest percentage of  $\text{AgNO}_3$  produced, namely 27.85% at 2 hours of heating time variation. The results of SEM-EDS analysis of  $\text{AgNO}_3$  samples at various heating times for 2 hours showed that the samples experienced agglomeration with grain size (21.59-120.1  $\mu\text{m}$ ), and a mass percentage of 92.68%.*

*Keywords:  $\text{AgNO}_3$ , silver, nitric acid, XRF, XRD, SEM-EDS.*