

## ABSTRAK

Skandium merupakan unsur tanah jarang yang memiliki berbagai aplikasi penting dalam industri dan potensi besar untuk meningkatkan nilai tambah dari bijih nikel laterit Indonesia. Tujuan penelitian ini adalah mengetahui karakterisasi bijih dan pengaruh variabel proses pelindian terhadap perolehan logam skandium. Penelitian ini menggunakan proses *hydrothermal leaching* dan analisis data melalui pendekatan metode Taguchi. Variabel proses yang dievaluasi meliputi konsentrasi asam (0,5M, 1M, 1,5M, 2M, 2,5M), *solid-liquid ratio* (0,22, 0,24, 0,26, 0,28, 0,3 g/mL), waktu pelindian (30, 60, 90, 120, 150 menit) dan temperatur pelindian (245°C, 255°C, 265°C, 275°C, 285°C). Hasil penelitian menunjukkan bahwa bijih nikel laterit berjenis limonit dengan kadar Skandium 59,8 ppm, variabel konsentrasi asam memiliki pengaruh paling signifikan dengan persen *recovery* Sc tertinggi sebesar 7,79% diperoleh pada variasi konsentrasi asam 2 M, sementara variasi optimal lainnya adalah *solid-liquid ratio* 0,24 g/mL (6,33%), waktu pelindian 90 menit (6,91%), dan temperatur pelindian 265°C (6,91%).

**Kata Kunci:** Skandium, Metode Taguchi, *Hydrothermal Leaching*, Persen *Recovery*.

## ABSTRACT

*Scandium is a rare earth element that has various important applications in industry and great potential to increase the added value of Indonesian laterite nickel ore. The purpose of this study is to determine the characterization of the ore and the effect of leaching process variables on the recovery of scandium metal. This study uses a hydrothermal leaching process and data analysis through a Taguchi method approach. The process variables evaluated include acid concentration (0,5M, 1M, 1,5M, 2M, 2,5M), solid-liquid ratio (0,22, 0,24, 0,26, 0,28, 0,3 g/mL), leaching time (30, 60, 90, 120, 150 minutes) and leaching temperature (245°C, 255°C, 265°C, 275°C, 285°C). The results showed that the laterite nickel ore is limonite type with Scandium content of 59.8 ppm, the acid concentration variable has the most significant influence with the highest recovery percent of 7.79% at 2 M acid concentration, while other optimal variations are solid-liquid ratio of 0,24 g/mL (6.33%), leaching time of 90 minutes (6.91%), and leaching temperature of 265°C (6.91%).*

**Keywords:** *Scandium, Taguchi Method, Hydrothermal Leaching, Percent Recovery.*