Application Note BATT1004

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BATT1004 - Composition Analysis for Nickel Laterite

Introduction

In nickel-laterite minerals, accurate quantitative analysis is required for Ni and Co, which determine ore grade, as well as for Fe and Mg, which serve as indicators for determining mineral refining methods. In quantitative analysis for these elements, ICP analysis is generally used. However, using XRF analysis makes it possible to perform similar analysis faster and more readily.

Composition analysis

- **Analysis:** Raw materials
- **Analysis method:** Matrix correction calibration curve
- **Use:** Quality assurance
- **Analyzed materials:** Nickel laterite

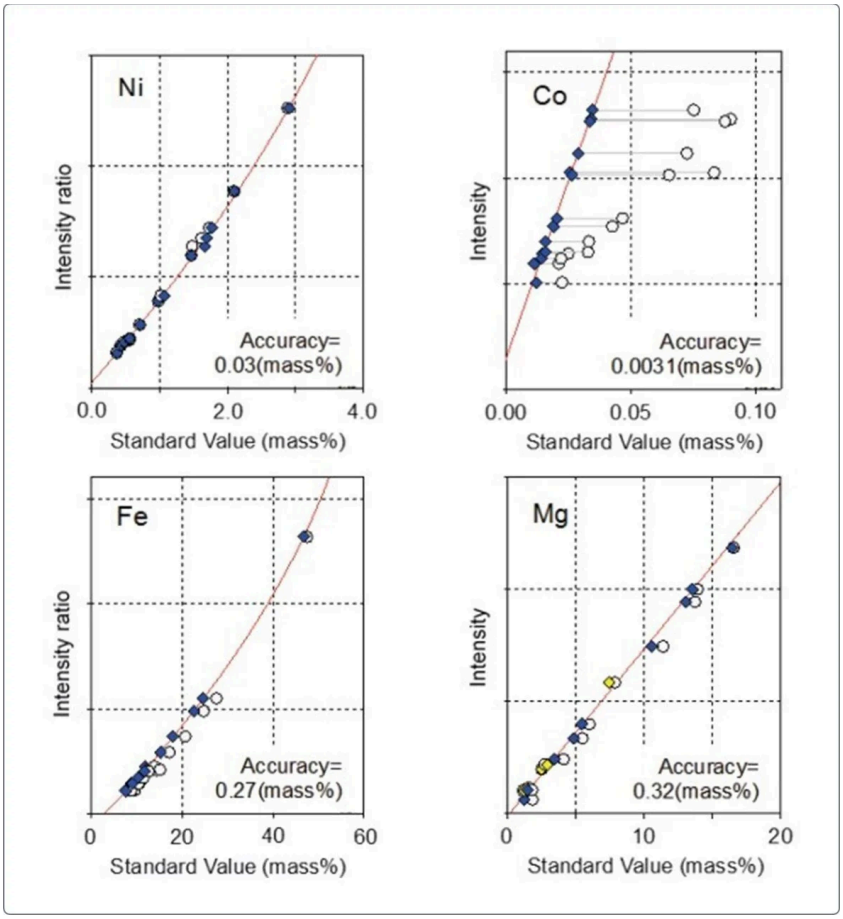

Figure 1: Calibration curve according to the powder press method for nickel-laterite mineral standard samples

Table 1: Composition analysis results using XRF

Elements	Standard Conc.	Analysis Conc.
Ni	1.02	1.01
Co	0.0899	0.0873
Fe	25.57	27.88
Mg	1.81	1.91

Conclusion

Through matrix correction combining the Compton scattering internal standardization method and FP method, a highly accurate calibration curve was obtained. Additionally, analysis concentrations were nearly consistent with standard concentrations. It is possible to swiftly obtain a highly reliable mineral composition with the materials still in powder form without acid dissolution or other complex forms of pre-treatment required for ICP analysis.

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