

Quantitative and Qualitative Analysis of Oxides using the FP Method - ElementEye JSX-1000S

Introduction

Rock, soil, glass, ceramics and incinerated ash are typical materials that can be classified as oxides. X-ray fluorescence is a widely accepted method for providing non-destructive qualitative and quantitative elemental analysis on oxide type materials. JEOL's JSX-1000S benchtop EDXRF spectrometer includes 'Quick and Easy Analysis' solution for fast, high sensitivity, standardless analysis of oxides with the touch of a button. Several examples are shown below.

Measurement Examples on Standard Samples

Soda Glass (NIST1831)

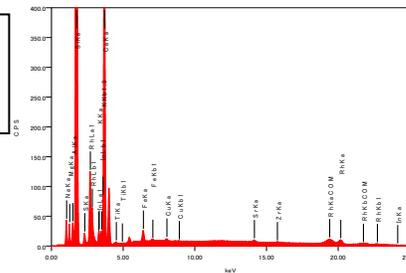
Sample



Measurement Condition

Tube Voltage : 50 kV
Collimator Dia : 9.0 mm
Atmosphere : Vacuum
Measurement Time : 60sec

Spectrum



Analysis Result

Unit:Mass%

Chemical Formula	Analysis Result (Easy Analysis)	Analysis Result (Manual Setting)	Certified Value
Na ₂ O	13.18	13.01	13.32
MgO	3.58	3.60	3.51
Al ₂ O ₃	1.33	1.28	1.21
SiO ₂	72.69	72.67	73.08
SO ₃	0.27	0.26	0.25
CaO	8.47	8.40	8.20
TiO ₂	0.019	0.029	0.019
Fe ₂ O ₃	0.093	0.095	0.087

Volcanic Ash (Andesite)

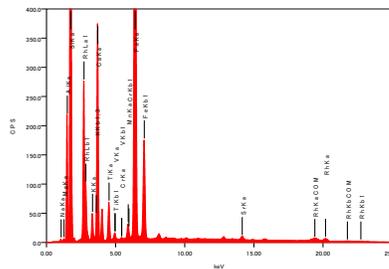
Sample



Measurement Condition

Tube Voltage : 50 kV
Collimator Dia : 9.0 mm
Atmosphere : Vacuum
Measurement Time : 60sec

Spectrum



Analysis Result

Unit:Mass%

Chemical Formula	Analysis Result (Easy Analysis)	Analysis Result (Manual Setting)	Certified Value
Na ₂ O	2.17	4.75	3.84
MgO	0.72	0.99	1.57
Al ₂ O ₃	14.80	17.16	15.22
SiO ₂	62.05	62.30	63.97
P ₂ O ₅	0.28	0.25	0.165
K ₂ O	1.02	0.79	0.77
CaO	7.47	5.7	5.7
TiO ₂	1.22	0.88	0.85
MnO	0.24	0.17	0.157
Fe ₂ O ₃	9.90	6.91	7.07

※ With quick and easy analysis, the calculated concentration of light elements is low, without correction for the influence of the prolene film.

Igneous Rock (Olivines)

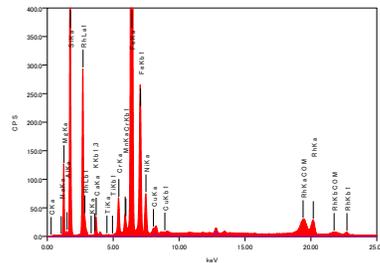
Sample



Measurement Condition

Tube Voltage : 50 kV
Collimator Dia : 9.0 mm
Atmosphere : Vacuum
Measurement Time : 60sec

Spectrum



Analysis Result

Unit:Mass%

Chemical Formula	Analysis Result (Easy Analysis)	Analysis Result (Manual Setting)	Certified Value
MgO	35.9	46.2	44.6
Al ₂ O ₃	1.13	1.09	0.66
SiO ₂	45.59	43.16	42.38
CaO	0.92	0.64	0.55
MnO	0.81	0.13	0.121
Fe ₂ O ₃	14.81	8.81	8.37