EPFL

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Physical and Chemical Analyses of Materials

Chemical analysis: Summary

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⇨ The following table gathers the principal features of the chemical analyses of materials:

technic	input beam	d_B (µm)	depth (µm)	$_zX$	LOD (ppm)	precision (atomic %)
WD-XRMA(1)	electrons	≈ 1	≈ 1(3)	≥ B(6)	50 - 100	< 1
ED-XRMA(2)	electrons	≈ 0.1	≈ 1(3)	≥ C(7)	500 - 1000	< 1
WD-XRFS	X-rays	100 - 400	1 – 1000(4)	≥ B(6)	0.1 - 1	0.1 - 1
ED-XRFS	X-rays	100 - 400	1 – 1000(4)	≥ C(7)	1 - 100	0.1 - 1
XPS	X-Rays	10 - 400	$0.5 - 5\times10^{-3}$(5)	≥ He	1000	1 - 3
AES	electrons	0.01-0.1	$5 - 10\times10^{-3}$(5)	≥ He	1000	5 - 10

1: electron microprobe analyser EMPA
2: electron microscope
3: semi-bulk analysis
4: bulk analysis
5: surface analysis
6: depending on the crystal analyzer
7: with a Be detector window ≥ Na, without detector window ≥ C