

ARL Optim'X - Typical Application

- Hot metal – Pig iron



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Typical applications

Hot metal – Pig iron
Desulfurization process



Typical composition

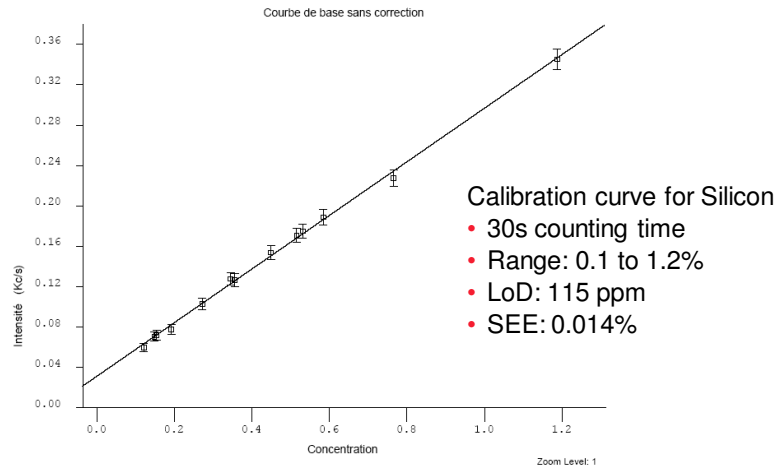
Elements	Concentration (%)
C	3.30
P	0.15
S	0.05
Si	1.60
Mn	0.90

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Irons analysis – ARL OPTIM'X WDXRF - 50W

Analyte: SiKa_Cl LDD (30 s): 115.1 ppm BEC: 0.117 % Q: 0.266 (Kc/s)% SEE: 0.0136

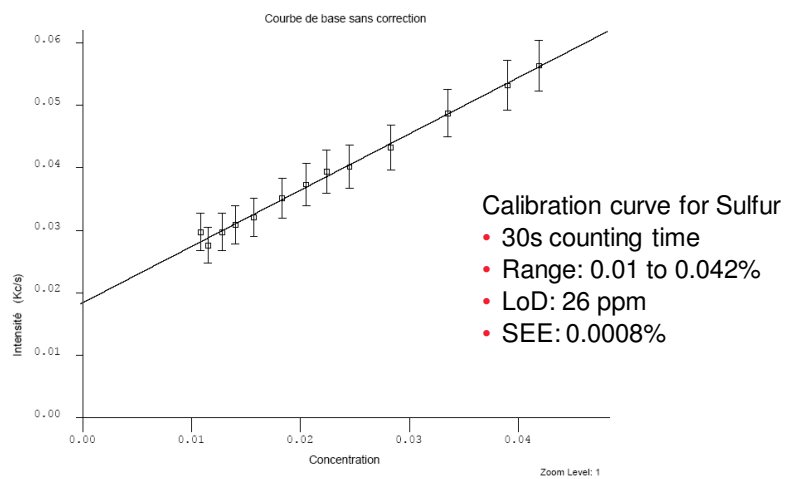


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Irons analysis – ARL OPTIM'X WDXRF – 50W

Analyte: S Ka_Cl LDD (30 s): 26.1 ppm BEC: 0.020 % Q: 0.901 (Kc/s)% SEE: 0.0008

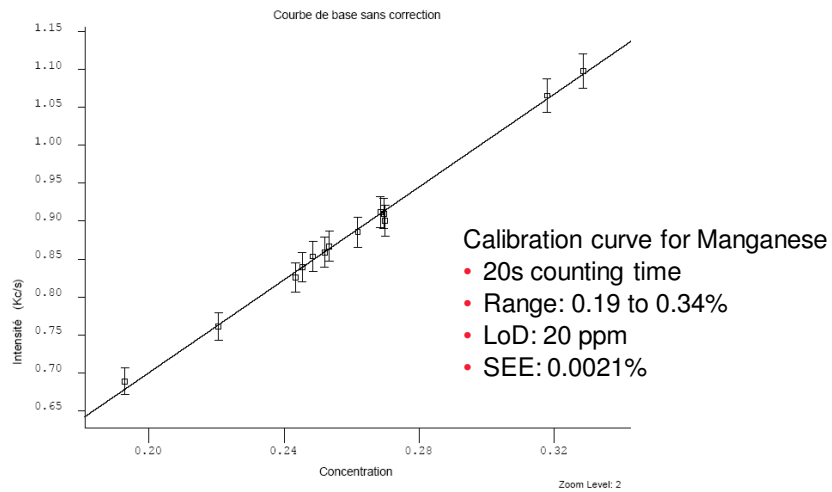


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Irons analysis – ARL OPTIM'X WDXRF – 50W

Analyte: MnKa_Cl LDD (20 s): 20.4 ppm BEC: 0.028 % Q: 3.064 (Kc/s)% SEE: 0.0021

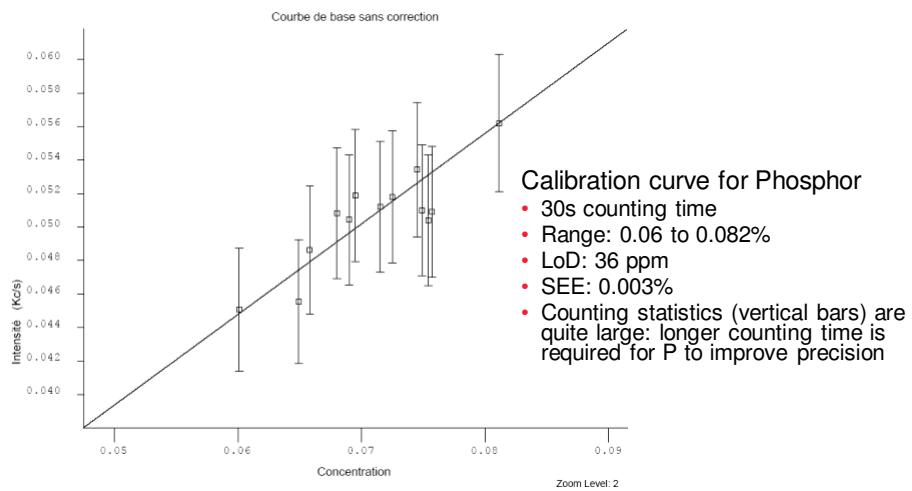


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Irons analysis – ARL OPTIM'X WDXRF – 50W

Analyte: P_Ka_Cl LDD (30 s): 35.6 ppm BEC: 0.023 % Q: 0.541 (Kc/s)% SEE: 0.0030

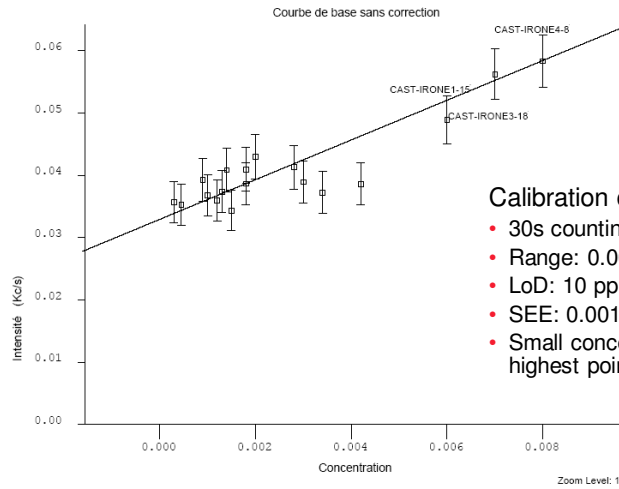


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Irons analysis – ARL OPTIM'X WDXRF – 50W

Analyte: ZnKa_Cl LDD (30 s): 9.9 ppm BEC: 0.010 % Q: 3.189 (Kc/s)% SEE: 0.0011



Calibration curve for Zinc

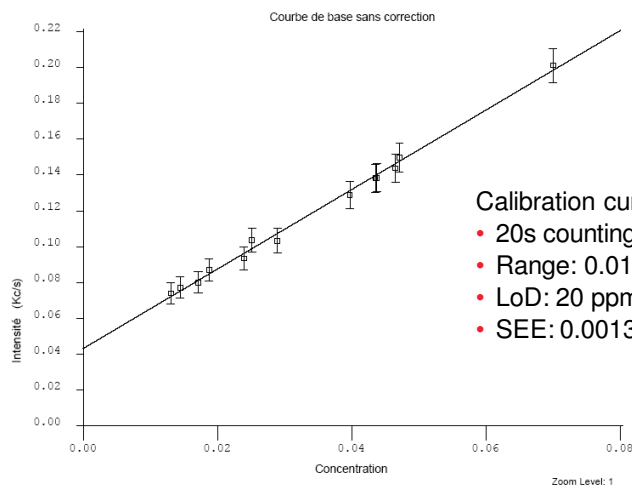
- 30s counting time
- Range: 0.001% to 0.008%
- LoD: 10 ppm
- SEE: 0.0011%
- Small concentration range with highest point at 80ppm !

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Irons analysis – ARL OPTIM'X WDXRF – 50W

Analyte: TiKa_Cl LDD (20 s): 19.9 ppm BEC: 0.020 % Q: 2.217 (Kc/s)% SEE: 0.0013



Calibration curve for Titanium

- 20s counting time
- Range: 0.01% to 0.07%
- LoD: 20 ppm
- SEE: 0.0013%

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Iron analysis – ARL Optim'X WDXRF low power

Analysis of hot metal during desulfurisation process

- Analysis of Si, Mn, S, Zn, P and Ti
 - Calibration curves established with customer samples (non certified concentrations)
- ARL OPTIM'X configuration for this test:
 - SmartGonio with 3 crystals (element coverage F to U)
 - Collimator 0.29°
 - Rh anode X-ray tube
- Total analysis time using SmartGonio only
 - for 6 elements at 50W: 2 min 40s
 - for 6 elements at 200W: 1 min
 - And with improved analysis of P

