Determination of copper and iron content in zinc-nickel electroplating solution

1 Sample solution preparation:

2 mL sample was accurately pipetted into a high pressure digestion can, 9 mL nitric acid was added, digested at 140 °C for 2 hours. After that, the digested solution was transferred into a 25 mL volumetric flask, diluted with water up to the volume, shaken well and spared for later use.

2 Experimental equipment and reagents:

AA7000 series atomic absorption spectrophotometer (with Cu, Fe hollow cathode lamp, EWAI Inc.)

High pressure digestion can

Constant-temperature blast drying oven

Nitric acid (HNO3): excellent grade purity

Copper standard solution (National Reference Materials Research Center)

Iron standard solution (National Reference Materials Research Center)

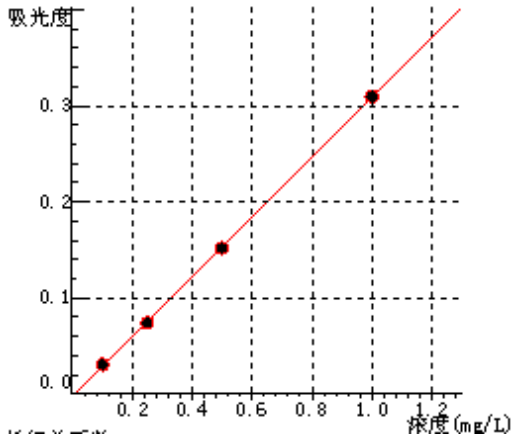
3 Instrument conditions

Parameter	Wavelength (nm)	Slid width (nm)	Burner height (mm)	Fuel gas flow rate (L/min)	Lamp current (mA)	Flame type
Cu	324.7	0.2	10	1.5	3	Air – acetylene
Fe	248.3	0.2	10	1.5	3	Air - acetylene

4 Standard solution preparation

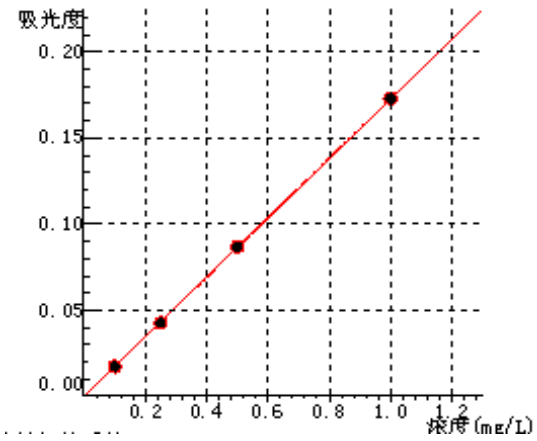
Element	Concentration (μg/mL)				
Cu	0	0.1	0.25	0.5	1.0
Fe	0	0.1	0.25	0.5	1.0

5 Standard curve



Cu curve equation: Y=0.17348*X-0.00041

linearity coefficient: 0.99990



Fe curve equation: Y=0.17348*X-0.00041

linearity coefficient: 1.00000