

# VA Application Note No. V - 166

**Title:** Nickel in a phosphatation bath

**Summary:** The concentration of Ni in a Zn phosphatation bath is determined by polarography in ammonia buffer pH 9.3.

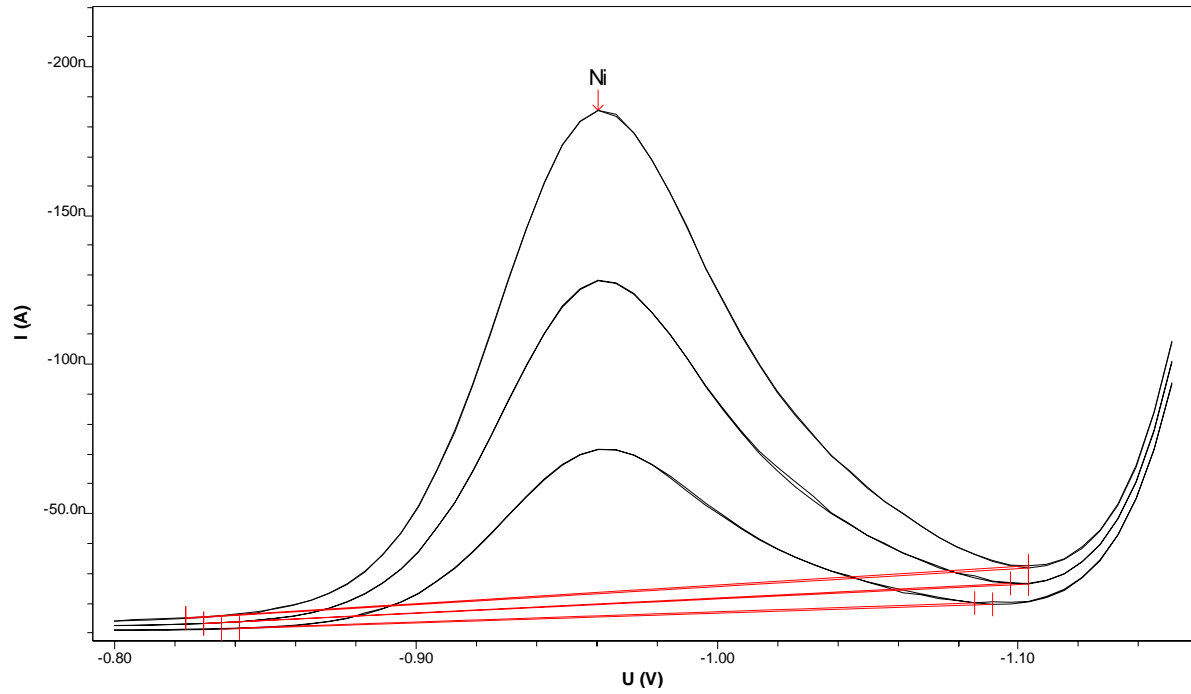
**Sample:** Zinc phosphatation bath

**Sample preparation:** Dilution 1:100

Analysis of Ni																									
<b>Ammonia buffer pH 9.3</b>	c(NH <sub>4</sub> Cl) = 1 mol/L c(NH <sub>3</sub> ) = 2 mol/L pH 9.3 adjusted with NH <sub>3</sub> or HCl																								
<b>Measuring solution</b>	10 mL H <sub>2</sub> O + 5 mL ammonia buffer pH 9.3 + 1 mL diluted phosphatation bath																								
<b>Working electrode (WE)</b>	<b>MME</b> (Multi Mode Electrode) 6.1246.020																								
<b>Auxiliary electrode (AE)</b>	<b>Pt</b> 6.0343.000																								
<b>Reference electrode (RE)</b>	Reference system: Ag/AgCl/KCl (3 mol/L) 6.0728.020 Intermediate electrolyte: c(KCl) = 3 mol/L 6.1245.010																								
<b>Parameters</b>	<table border="1"> <tbody> <tr> <td>Working electrode</td> <td>DME</td> </tr> <tr> <td>Stirrer speed</td> <td>2000 rpm</td> </tr> <tr> <td>Mode</td> <td>DP</td> </tr> <tr> <td>Purge time</td> <td>300 s</td> </tr> <tr> <td>Equilibration time</td> <td>5 s</td> </tr> <tr> <td>Pulse amplitude</td> <td>0.05 V</td> </tr> <tr> <td>Start potential</td> <td>-0.8 V</td> </tr> <tr> <td>End potential</td> <td>-1.15V</td> </tr> <tr> <td>Voltage step</td> <td>0.006 V</td> </tr> <tr> <td>Voltage step time</td> <td>0.6 s</td> </tr> <tr> <td>Sweep rate</td> <td>0.01 V/s</td> </tr> <tr> <td>Peak potential Ni</td> <td>-0.96 V</td> </tr> </tbody> </table>	Working electrode	DME	Stirrer speed	2000 rpm	Mode	DP	Purge time	300 s	Equilibration time	5 s	Pulse amplitude	0.05 V	Start potential	-0.8 V	End potential	-1.15V	Voltage step	0.006 V	Voltage step time	0.6 s	Sweep rate	0.01 V/s	Peak potential Ni	-0.96 V
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<b>Results:</b>	Ni
	635.9 mg/L

**Determination of Ni**



Ni  
c = 635.862 mg/L  
+/- 2.078 mg/L (0.33%)

