Fabrication method of Ni\textsuperscript{2+} Standard Curve

[Experimental Reagents]

**Nickel ion standard solution**: Take 2.0250g Nickel(II) Chloride Hexahydrate Puratrem (0.5g Ni\textsuperscript{2+}) dissolved in HCl solution \((\text{HCl:}\text{H}_2\text{O}=1:23)\) and transfer to a 50ml volumetric flask and add HCl solution \((\text{HCl:}\text{H}_2\text{O}=1:23)\) to the scale. (the nickel ion solubility is 10g/L).

**Nickel ion solution**: Take 10 mL of standard solution in a 100 mL volumetric flask and add HCl solution \((\text{HCl:}\text{H}_2\text{O}=1:23)\) to the scale. (the nickel ion solubility is 100mg/L).

**500g/L potassium sodium tartrate solution**: Weigh 50g of sodium potassium tartrate crystals in a beaker, dissolve in water, and transfer to a 100 mL volumetric flask, dilute to the scale, and shake.

**160g/L ammonium persulfate solution**: Weigh 16g of ammonium persulfate dissolved in 100mL of water, and transfer to a 100mL volumetric flask, dilute to the scale and shake.

**10g/L diacetyldioxime-ethanol solution**: Dissolve 1 g of dimethylglyoxime in 100 mL of ethanol.

[Experimental steps]

Take 0, 5, 8, 10, 20, 50, 200, 300, 400, 500 \(\mu\)L of the nickel ion solution then put to 10mL colorimetric tube, respectively.

Add HCl solution \((\text{HCl:}\text{H}_2\text{O}=1:23)\) to 5 mL, then add 0.5mL 500g/L potassium sodium tartrate, 1.5mL 100g/L sodium hydroxide solution and 0.5mL 160g/L ammonium persulfate solution. Mix them and set aside for 3 minutes.

Add 0.2mL 10g/L diacetyldioxime-ethanol solution, add water to 10mL and set aside for 20 minutes after mixing.

Take 300 \(\mu\)L of the above solution into a 96-well plate and measured its absorbance (wavelength 470 nm) with a microplate reader.

The standard curve of absorbance and nickel ion concentration was established.

[Experimental Data:]

<table>
<thead>
<tr>
<th>C (Ni\textsuperscript{2+}) mg/L</th>
<th>0</th>
<th>0.05</th>
<th>0.08</th>
<th>0.1</th>
<th>0.2</th>
<th>0.5</th>
<th>1</th>
<th>2</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abs</td>
<td>0.093400</td>
<td>0.128000</td>
<td>0.106730</td>
<td>0.140630</td>
<td>0.143367</td>
<td>0.217900</td>
<td>0.326983</td>
<td>0.526875</td>
<td>0.923150</td>
<td>1.316670</td>
</tr>
</tbody>
</table>

[Experimental Results]
Standard curve of $\text{Ni}^{2+}$

$y = 0.2281x + 0.004$

$R^2 = 0.9901$