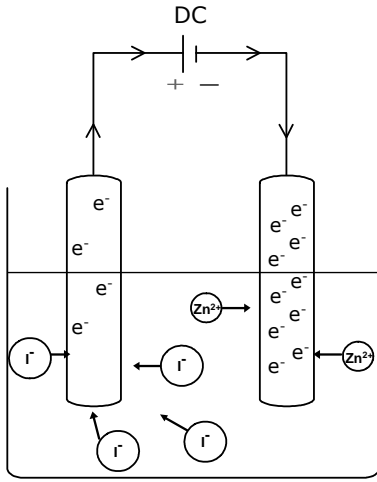
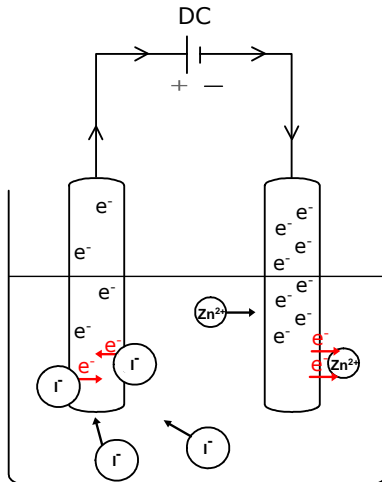
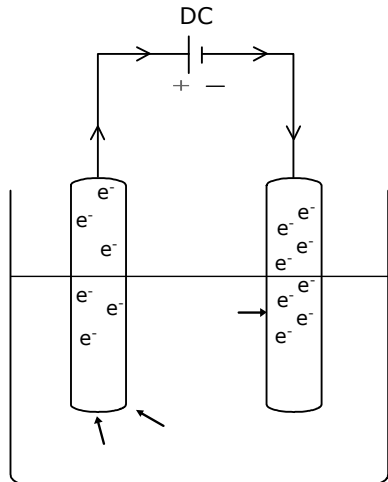


Methode: Wechsel der Darstellungsformen
 fachliches Ziel: Auswerten des Versuchs Elektrolyse von Zinkiodid-Lösung
 sprachliches Ziel: Verwendung der Fachsprache auf Stoff- und Teilchenebene

I) Electrolysis of zinc iodide solution: explanation using the particle level

<p>P1: _____</p> 	<p>P2: _____</p> 	<p>P3: _____</p> 
<p>Description P1: There are....</p>	<p>Description P2: At the electrode connected to the positive pole ...</p>	<p>Description P3: Iodine molecules are formed at the electrode connected to the positive pole. Zinc atoms are formed at the electrode connected to the negative pole.</p>

Work with a partner!

Your tasks:

1. Describe which particles are shown inside the solution in P1.
2. Explain why there are different numbers of each type of particle in P1.
3. Explain why the particles move into different directions in P1.
4. Describe what happens to the ions and electrons in P2.
5. Draw the missing particles into P3 according to the description. Think about the size of the particles, too!
6. Add the following titles to P1-P3: *Electron transfer – Products at the electrodes- Ions in the solution*
7. Write the reaction equation for the two reactions at the electrodes and formulate an overall reaction equation.

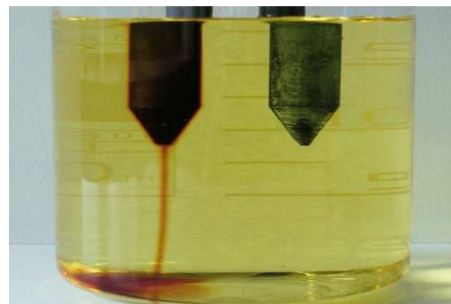
Methode: Wechsel der Darstellungsformen
fachliches Ziel: Auswerten des Versuchs Elektrolyse von Zinkiodid-Lösung
sprachliches Ziel: Verwendung der Fachsprache auf Stoff- und Teilchenebene

II) Electrolysis of zinc iodide solution: explanation using the particle level and the level of matter

Work with a partner!

Your tasks:

The photograph shows what can be observed during the electrolysis. *Observations* contain information about what you can see, hear, smell, etc. You describe this on the *level of matter* (c.f. the text on the right). In a *conclusion* you can either explain on the *level of matter* which processes take place or you can describe the processes on the *particle level*.



P4 Electrolysis of an aqueous solution of zinc iodide. Observation:
After some time the electrode connected to the negative pole turns grey at the surface that is inside the solution. The solution close to the electrode connected to the positive pole turns brown. The brown solution sinks to the ground.

1. In the following text there is a mix of explanations on the particle level and explanations on the level of matter.

a) Underline explanations on the particle level and those on the level of matter with different colours.

When a voltage is applied, the positively charged zinc ions move to the electrode connected to the negative pole, the cathode. The iodide moves towards the electrode connected to the positive pole, the anode. Electrons are accepted by the zinc ions, the iodide ions give away electrons. So there is a redox reaction taking place: zinc ions are reduced and iodide ions are oxidised. Zinc is formed and covers the cathode material. Iodine is formed at the anode. Iodine molecules are dissolved in the solution, so the solution turns brown.

b) On a separate sheet of paper try to write an explanation which is on the level of matter and an explanation which is written using the particle level.

2. Compare the photograph P4 with the sketches P1 – P3. Explain which sketch depicts the information we get from P4 best. Name the similarities and differences in the sketch and the photograph.
3. Some of the following terms can be used for descriptions on the level of matter, others for descriptions on the particle level. Group the terms and use them in sentences that relate to the electrolysis of a zinc iodide solution:

*iodine molecules - water molecules –
zinc - aqueous solution – zinc iodide –
zinc atoms – electrons – brown solution-
oxidation –transfer of electrons – iodine
- iodide ions – grey layer - zinc ions -
reduction – water – electric current*

Level of matter	Particle level