Name

Course

Instructor

Date

Electrochemistry

1. Faraday's Law

Michael Faraday's law of electromagnetic induction says that whenever a conductor is positioned in a changeable magnetic field emf are induced which is referred to as induced emf. The scale or magnitude of the emf generated in a conductor is proportional to the rate of transformation or change of the magnetic flux-linkage felt by the conductor. No matter how the transformation or change is generated or produced, the voltage will be produced because of the transforming or changing magnetic field strength, moving a magnet away or towards the coil.

2. What is a galvanic cell and how does it work?

Galvanic cells collect the electrical energy present from the electron transmission in a redox response or reaction to carry out an important electrical work. The main thing to the collection of the electron flow is to split the reduction half-reactions and oxidation linking them by a wire or a coil in order to allow the electrons to flow through the coil or wire. The electron flow known as the current can be sent via circuit or route, which could form part of any available devices such as watches or television. In order to understand how a galvanic cell works, it is significant to have a setup with the left hand cell depicting reduction half reaction and oxidation connected by

a wire and porous diskette. The right hand cell has a salt bridge that substitutes the porous diskette. The porous disk maintains the neutrality or impartiality of each half-cell permitting the flow of electrons or ion with little fixing of the half-cell solutions. The cells allow the electrons to be transferred or moved from the oxidation half-reduction cell to the decrease half-cell. This in turn leads to establishment of a negative and positive half-cell, which allows the flow of current in the coil or wire.

3. How potentiometric measurements are made

Potentiometer is a tool used in measuring the latent of an electrochemical cell without changing or transforming the composition of the cell. In potentiometry, the latent of an electrochemical cell is calculated or gauged under certain conditions. This is because no current flows in the coil or wire while measuring the potential of a solution its composition remains constant. Potentiometric measurements are constructed using a potentiometer to illustrate and locate the difference in potential between an indicator or a functioning electrode and a reference or a counter electrode. In this case, the anode is the reference or the counter electrode while cathode is the working electrode or an indicator.

4. How reference electrodes are made and why they’re important

The reference electrodes are made from the reduction potential of the anode or left half-cell. They are significant because they generate high potentials utilized for PH measurements and polarographic assessments. Good examples of reference electrodes are mercury pool and silver chloride electrode.

5. Purpose of double junction electrode

The double junction electrode is used to extend the life electrodes in a contaminated gel. It can be utilized in biological samples to replace calomel reference electrodes. The double junction electrodes works as outer filling solutions between the test solution and the inner reference system so that it does not destroy or contaminate the test solution with ions that could influence the evaluation.

6. Two types of indicator electrodes

They are the cathode and the anode. The cathode is the positively charged electrode on the right hand side of the half-cell while the anode is the negatively charged electrode on the left side of the half-cell.

7. What is a junction potential and why is it problematic?

A junction potential is where two solutions of distinct concentrations mix. It is a problem because the more concentrated solution will diffuse in the solution that is less concentrate which turn affects the analysis. This is because in case the anions diffuse quickly than the cations, they will diffuse fast into the less concentrated solution leaving a solution that is negatively charged and a solution that is concentrated and positively charged.

8. What is an ISE and how does it work

It is an ion-selective membrane. It is significant to incorporate in the circuit a strong reference indicator or voltage which works as a half cell from which to gauge the relative deviations.

9. Potential sources of error in pH measurements

Chemical resistance of pH glasses and electrical resistance of pH glasses can interfere with the PH measurements.

10. Types of ISEs and briefly how they work

They include glass membrane and crystalline membranes

Glass membrane, which has better selectivity for metals that are double charged. It functions well in aggressive media. Crystalline membranes have good selectivity of only ions.

Work Cited

Haman, Carl. *Electrochemistry*. New York: Wiley, 2007. Print.