

P77. DEVELOPMENT OF ENVIRONMENTALLY FRIENDLY, RECHARGEABLE AND CHEAP "HYDROGEN SULFIDE BATTERY"

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Batteries are electrochemical systems that convert chemical energy into electrical energy. While electrical energy is generated by oxidation of the at the anode in these systems, in which anode and cathode parts are separated with a membrane, reduction reaction occurs at the cathode. Hydrogen sulfide (H₂S) acts as a fuel because of the contained S⁻ ions and electricity generation is provided while S⁻ ions are transforming into S⁰ with the following reaction via the oxidation reaction at the anode: S⁻ → S⁰ + 2e⁻

Meanwhile, MS (metal sulfides) formed on the surface increases the battery's activity. Thus, an unwanted and pollution constructive chemical substance is not released to the atmosphere so environmental pollution is prevented; electrical energy is generated as well as a cell, whose activity increases while working, is developed.

Hydrogen sulfide is a harmful gas but its emergence is inevitable as a result of many energy production processes. Some processes allow the cleaning of the fuels prior to combustion, while some processes are being implemented to keep H₂S in the flue gas formed as a result of combustion without releasing to the atmosphere.

In this study, Cyclic Voltammetry Technique is used for the electrochemical measurements. Cyclic voltammetry is an electrochemical method widely used in clarifying the structure of the electrochemical reactions. Cyclic voltammetry is one of the simplest and most powerful electrochemical techniques utilized in determining thermodynamics of oxidation-reduction reactions, electrochemical reactions and chemical reaction mechanisms marching together with electrochemical reactions. In cyclic voltammetry studies, the potential is scanned in forward and backward at a constant speed in a certain range. Findings and achievements obtained as the results of this study can be grouped as follows:

- It was observed that electrical energy could be obtained from solutions containing sulfur by using the battery system.
- Thus, an environmentally friendly battery is prepared.
- Its activation is increased with the usage of the electrode surface.
- It was observed that the prepared battery is cheap.

