Study the process of removing chromium from aqueous solution in a dc discharge With electrolyte cathode

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Current technologies for treatment of Cr-containing wastewaters include ion exchange, adsorption, membrane separation, solvent extraction and electrodialysis. Among them, the conventional method of reduction using chemicals such as sulfur dioxide or sodium metabisulfite is easy to implement but produces additional pollution due to the use of reducing chemicals and production of poisonous by products. Thus, the actual development of new alternative technologies for wastewater treatment of various chromium compounds. In recent years have seen research on the use for such purposes plasma chemical discharges are in contact with the liquid. The aim of of this work was study the process of removing the Cr3 + and Cr6 + from aqueous solutions under the action of a dc discharge at atmospheric pressure with a copper electrode.

The experimental setup used in our work is shown in Fig. 1.

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| Fig.1. Installation diagram, d - the distance between the surface of the copper anode and liquid cathode. | The discharge was initiated in the gap (d) equal to 4 mm, on top of which is the anode, which is pointed towards the end of a copper wire of diameter 1.25 mm (GOST 26615-85 Type 1) and from below, respectively, a cathode, representing a glass a container with a working solution, and dipped in it the copper electrode. The distance d is controlled using the millimeter scale deposited on the back side of the container. The discharge current was 20 mA. Electrolyte volume of 100 ml. Detailed Installation scheme described in [1]. |

We have used the solutions with a chromium content of from 2.5 to 25 mg / l. After treatment in the plasma were measured concentration Cr3 + and Cr6 +, hydrogen peroxide, and the pH of the solution. The data obtained suggest that the action of discharge reduces the total chromium concentration in the solution.

*The work was supported by the Russian Foundation for Basic Research project
No. 14-02-01113 A.*

References

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