



**“Gh. Asachi” Technical University of Iasi, Romania**

---

## **WASTEWATER DECOLORIZATION BY CHEMICAL AND ELECTROCOAGULATION METHODS**

**Gheorghe Duca, Maria Gonta, Vera Matveevici\*,  
Doina Porubin, Octav Nistor**

*Moldova State University, Departament of Industrial and Ecological Chemistry  
MD-2009, Chisinau, Mateevici 60, Republic of Moldova*

---

### **Abstract**

There has been studied the process of removal of the direct magenta color and outrageous orange dyes from simulated solutions by means of their adsorption on aluminum hydroxide, obtained during the hydrolysis of the sulfate of aluminum (I<sup>st</sup> method) or electrochemical dissolution of the aluminum anodes (II<sup>nd</sup> method), depending on the initial concentration, the time of treatment and the value of the pH.

It has been established that the removal of the direct magenta color dye takes place in a larger interval of pH (5.0 – 7.0) and it increases in the presence of the ions of calcium, but the outrageous orange dye is adsorbed in a narrower interval of pH (5.0 – 6.5) and it doesn't change in the presence of calcium cations.

It has been established that the removal of the direct magenta dye is achieved through the co-precipitation of the associated and neutralized (with the help of the colloidal particles of aluminum hydroxide) aggregate and the effect of removal is absolutely identical for the aluminum hydroxide, obtained from both methods.

The removal of the outrageous orange dye is achieved through the adsorption of the dissociated molecules by the colloidal particles of the aluminum hydroxide, while the the effect of dye removal depends on the method of obtaining of aluminum hydroxide. If the molecules are associated and they form aggregates, then they can be more efficiently removed with the help of the aluminum hydroxide obtained from the I<sup>st</sup> method and if the molecules are unassociated, (the bonds between the associated molecules are broken through partial oxidation) then the effect of removal is lower.

*Keywords:* nitrates, electrochemistry, reduction, soluble anode

---

---

\* Author to whom all correspondence should be addressed: Phone: 00373(22)577554, e-mail: [vmatveevici@yahoo.com](mailto:vmatveevici@yahoo.com)