



“Gheorghe Asachi” Technical University of Iasi, Romania



---

## COAGULATION CHARACTERISTICS OF ORGANIC POLLUTANTS REMOVAL IN CSO WASTEWATER TREATMENT

Wei-gang Wang<sup>1</sup>, Zu-xin Xu<sup>1</sup>, Huai-zheng Li<sup>2</sup>, Wei Jin<sup>1\*</sup>

<sup>1</sup>State Key Laboratory of Pollution Control and Resources Reuse, Tongji University, Shanghai 200092, China

<sup>2</sup>Key Laboratory of Yangtze River Water Environment, Ministry of Education, Tongji University, Shanghai 200092, China

---

### Abstract

In this work, coagulation features and characteristics of dissolved organic matter (DOM) in combined sewer overflow (CSO) wastewater were investigated. Ferric chloride ( $\text{FeCl}_3$ ) and polyaluminum chloride (PAC) were employed in the coagulation process. Results showed that both  $\text{FeCl}_3$  and PAC are effective in removing turbidity and total phosphorus (TP). Removal efficiencies were all above 90% when dosages were reasonable. Chemical oxygen demand (COD) removal efficiency was between 60% and 70%. The removal efficiency of ammonia nitrogen ( $\text{NH}_4^+\text{-N}$ ) and total nitrogen (TN) was 10%–20% only. Comparisons of the removal efficiency for COD, turbidity,  $\text{NH}_4^+\text{-N}$ , TN, and TP in different concentrations of raw wastewater with the same dosages of  $\text{FeCl}_3$  and PAC were also investigated. Results showed that water quality of raw wastewater is one of the influential parameters for the optimized treatment of CSO wastewater. The molecular weight (MW) distribution of DOM in the initial and the coagulated samples was determined by gel filtration chromatography (GFC) and ultrafiltration technology. Compared with the initial wastewater, coagulated samples had much narrower distributions of MW. DOM fraction that  $\text{MW} > 30\text{kDa}$ , especially fractions that  $\text{MW} > 100\text{kDa}$ , can be removed effectively by coagulation using  $\text{FeCl}_3$  and PAC.

**Key words:** coagulation, CSO wastewater, dissolved organic matter, GFC, ultrafiltration

*Received: August, 2011; Revised final: November, 2012; Accepted: December, 2012*

---

---

\* Author to whom all correspondence should be addressed: wangweigang7081@163.com; Phone: +86 2165981650; Fax: +86 2165982291