

EXPERIMENTAL STUDY ON CHITOSAN COMPOSITE  
FLOCCULANT FOR TREATING PAPERMAKING  
WASTEWATER

D. Zeng, D. Hu, J. Cheng

School of Resource and Environmental Engineering, Wuhan University  
of Technology, P.R. China

Recieved 04.03.2011

*In this paper, the flocculation effect of a novel composite flocculant for treating papermaking wastewater was studied and discussed. Results indicated that it achieved the best flocculation effect when this composite flocculant consisting of 60 mg/L of polymerized ferrous sulfate, 2 mg/L of polyacrylamide and 0.4 mg/L of chitosan, and pH value of wastewater was adjusted to 7.5. It also observed that the removal rate of chemical oxygen demand (COD) and solid substances (SS) with this novel composite flocculant reached 72.5% and 98.5% respectively. Compared with the conventional flocculant such as polyacrylamide/polyaluminium chloride, the percentage of removing COD and SS using this composite flocculant were increased by 15.2 and 6.4% respectively, moreover, its input cost was cut down 18.4%. So this composite flocculant has significantly environmental and economic benefits.*

**Keywords:** composite flocculant, flocculation, papermaking wastewater.

### Introduction

Papermaking industry is one of six industrial pollution sources in the world. Papermaking wastewater has a large amount of discharge, high concentration of pollutants, poor biodegradation and strong toxicity [1 – 3]. And it contains the massive phenol, halogenated hydrocarbon and many other kinds of persistent organic pollutants in papermaking wastewater. So, to solve the pollution problem of papermaking wastewater has aroused the concern from the whole society.

As a physical chemical method, flocculation is widely used to treat papermaking wastewater because of its simple technology, upstanding effect in persistent organic pollutants, some fine particles, chromaticity and turbidity, low cost as well [4, 5]. Current flocculants are generally classified into three categories, inorganic, organic and composite flocculants. The obvious disadvantages of inorganic flocculants, like polyaluminium chloride, are its large applied dosage