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Flocculation of rubber factory waste water with calcium and polyelectrolytes

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Cationic polymers are very efficient in the recovery of rubber from waste effluent. They can be used with other salts or polymers to reduce the overall process cost. In this study, calcium ions, anionic and non-ionic polymers are experimented to reduce the critical flocculation concentration (CFC) of cationic polymers (U 5000 or FO 8650). Experiments were performed by a jar test and the CFC of each cationic polymer was determined prior to this study under same conditions of wastewater pH and rubber concentration. Results showed that combining cationic polymers with calcium ions could decrease the cationic polymer concentration by 75% for total rubber recovery. The cationic polymer (U 5000) dose is reduced by 10% and 25% respectively when combined with anionic and non-ionic polyacrylamides. On the other hand, the cationic polymer (FO 8650) dose is reduced by 10% when combined with non-ionic polyacrylamides. Therefore, the combined use of calcium ions with cationic polyacrylamides in latex waste water flocculation leads to the lowest amount of polymer demand while maintaining an even better recovery of the rubber with residual turbidity of wastewater below that recommended for potable water (<5 NTU). Floc consistency, rubber recovery and clarification were better for U 5000 than FO 8650 as such, U 5000 was found suitable for rubber factory wastewater treatments, if it was to be done using cationic polyelectrolytes.

Biography

Ndi K S is an Associate Professor at the University of Ngaoundere (Cameroon), and Director of Engineering Consulting and Services, a water treatment company based in Douala (Cameroon). His current research is on drinking water treatment and waste water treatment processes, for respectively rural population and industries. The use of natural flocculants, synthesis of new materials and microorganisms for water treatment is one of its main objectives.

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