

Decolourisation of palm oil mill biogas plant wastewater using Poly-Diallyldimethyl Ammonium Chloride (polyDADMAC) and other chemical coagulants

Abstract

Palm oil mill effluent was expected as a future source of renewable biogas. Nevertheless, colours in palm oil mill biogas plant wastewater (POMBPW) causes negative perception among the public and the wastewater is difficult to be treated biologically. In this study, the performance of various chemical coagulants i.e., calcium lactate, magnesium hydroxide, ferric chloride, aluminium chlorohydrate i.e. CK-800, CK-1000, and polyDADMAC, for POMBPW colour removal were investigated. PolyDADMAC (1,000 mg/L) shows best colour removal (~48%). The main coagulation process with polyDADMAC could be due to charge neutralization-bridging mechanism. The zeta potential analysis supports the finding where the value became positive as the dosage increases. The addition of polyDADMAC has increased the conductivity of the treated wastewater up to 9.22%; however, the final pH is maintained (8.0-8.3). It can be deduced that polyDADMAC has potential to treat POMBPW at low dosage.