Comparative study of poly inorganic coagulant in wastewater treatment

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Abstract

Four novel of poly inorganic co-agulant were prepared such as poly aluminum chloride(PACl), poly ferric chloride (PFeCl), poly aluminum hydroxy silicate (PAHS) and poly aluminum ferric chloride (PAlFeCl) and characterized using FTIR, NFTIR and XRD. The samples were compared with conventional coagulant such as PAC` and Alum. Applications were carried out for the removal of some pollutants from ground and sewage waste water. It was found that the maximum percentages removal of $Fe^{+2}$ and $Mn^{+2}$ ions in ground water reached 99 and 92%,using PAC` and PAC respectively, the maximum percentages removal of COD, BOD and TSS in sewage waste water reached 88, 85, and 92%, usingrespectively PAlFeCl. The removal percentage of the same pollutants Fe^{+2}, Mn^{+2}, COD, BOD and TSS are 99, 83, 76, 70 and 91 % respectively when using conventional PAC, and in the case of Alum the removal percentage of Fe^{+2}, Mn^{+2},COD, BOD and TSS are 99, 83, 63, 62.5 and 90 %, respectively. Therefore, the co-polymer of iron and manganese co-agulants is considered as a better replacement technology for sewage waste water treatment due to low cost and good efficiency in this application, as well as it will solve the problem of water shortage and contribute as a non-conventional water resources.

Keywords: polyinorganic coagulants, conventional co- agulants, some pollutants removals