Abstract

Fe NPs were biosynthesized using black tea extracts. Unlike other literatures for biosynthesis of Fe NPs using pure materials made by famous companies, in this study, the base material for iron recycling was DWTS which is a waste and has 33% iron. FESEM/EDX, XRD, ICP, XRF and FTIR analyses were used to characterize the materials. The obtained Fe NPs have diameter between 20- 40 nm. To have an application and test the practicable properties of this NPs they were applied as an additive in AD of SHWW to improve this process. The related experiments investigated that the removal COD efficiency, biogas and methane yield can be enhanced up to 41.93%, 41.19% and 21.74%, respectively, due to partial conversion of produced CO_2 to methane in the presence of iron NPs.