Flotációs eljárás hatékonyságának fokozása a nyomtatott papír festékanyag tartalmának eltávolítására

Improvement of deinkability efficiency of printed paper using flotation process

Balla Noémi Szonja, Farkas Csilla, Nguyen Duc Quang

Szent István Egyetem, Élelmiszertudományi Kar, Sör- és Szeszipari Tanszék

1118 Budapest, Ménesi út 43-45.

Summary

Waste papers have big potential as raw materials for many applications such as for bio-ethanol production. However, the presence of contaminants such as ink on paper fibres genarally have a negative effect on sugar conversion in enzymatic hydrolysis and alcoholic fermentation. Flotation de-inking process is one of a perspective method for removal of printed ink. In the present study, investigation of alcoholic de-inking flotation process on three different types of printed waste papers - pulped form and two different paper size: 0.5 x 0.5 cm and 2.0 x 2.0 cm – was aimed as well as flotation time, temperature and dosage of ethanol were also optimized. Results showed that the highest ink removal was 263.6 $mg.L^{-1}$ at 1%, w/v consistency of pulped paper, 50±0.2°C, 25 %, V/V of ethanol and 30 min, however the flotation losses were also high, it was 559.5 $mg.L^{-1}$. Central composite design (CCD) was used to determine the optimal conditions and statistically analyzed the efficiency of ethanol and temperature on deinking process. The ink removal seems to be more effective at 55-60 °C and 25-35 %, V/V% ethanol dosage with about 280-300 $mg.L^{-1}$ ink removal. The ANOVA showed, that increased temperature strongly affected the ink removal and flotation losses than ethanol dosage. The results are still preliminary, though these can serve as a basis for further experiments to develop more economical flotation de-inking process.