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Title:	A pollution reducing enzymatic deinking approach for recycling of mixed office waste paper
Authors:	Singh, Avtar (/jspui/browse?type=author&value=Singh%2C+Avtar)
Keywords:	Chemi-enzymatic deinking strategy Chemical deinking Enzymatic deinking Mixed office waste paper
Issue Date:	2020
Publisher:	Springer Science and Business Media Deutschland GmbH
Citation:	Environmental Science and Pollution Research, 27(36) pp. 45814-45823
Abstract:	The efficiency of xylano-pectinolytic enzymes, co-produced by a single microbial strain <i>Bacillus pumilus</i> , was analysed for the recycling of mixed office waste paper through deinking and compared with the alkaline chemical deinking method. Enzymes showed maximum deinking at pH 8.5, pulp consistency of 10%, xylanase-pectinase dose of 12 and 4 IU per gram pulp, respectively, after 120 min of deinking period, and temperature at 50 °C. A chemi-enzymatic approach was employed with xylano-pectinolytic enzymes and various concentrations of deinking chemicals, which showed that enzyme-treated mixed office waste pulp requires only 40% chemicals for deinking, in order to get the almost same level of various handsheets properties, as obtained by the chemical method with 100% chemicals. Similarly, the effluent load of BOD and COD contents was also decreased by 17.90 and 19.75%. This combinational approach of deinking significantly improved the various properties of the handsheets and resulted in gain of 7.5, 9.38, 6.33 and 11.65% in tear factor, burst factor, breaking length and viscosity of the handsheets, while the effective residual ink concentration analysis of deinked handsheets of mixed office waste paper showed deinking efficiency of 22.45%, which revealed the removal of ink particles during enzymatic deinking steps.
Description:	Only IISERM authors are available in the record.
URI:	<a href="https://pubmed.ncbi.nlm.nih.gov/32803575/">https://pubmed.ncbi.nlm.nih.gov/32803575/</a> ( <a href="https://pubmed.ncbi.nlm.nih.gov/32803575/">https://pubmed.ncbi.nlm.nih.gov/32803575/</a> ) <a href="http://hdl.handle.net/123456789/3202">http://hdl.handle.net/123456789/3202</a> ( <a href="http://hdl.handle.net/123456789/3202">http://hdl.handle.net/123456789/3202</a> )
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