

ABSTRACT

The present thesis focuses on the study of Ionic fluids, a new environmentally friendly category. There was an effort to isolate and categorise micro-organisms that have the ability to biodegrade ionic fluids.

In connection to the biodegradation of ionic fluids the use of primary, secondary sludge was used and anaerobic digestion. In a series of tests and trials the micro-organisms defined were developed in an infectious environment. Subsequently for the biodegradation of ionic fluids the use of Tetrabutylammonium iodide and 1-butyl-3-methylimidazolium methanesulfonate. Lastly the ionic fluids were subjected to the "closed Bottle test" in order to test their biodegradation in various temperatures (T) and pH, using the spectrophotometer method. Simultaneously the optimum temperature (T) and pH conditions were defined for the growth of micro-organisms. For the Tetrabutylammonium iodide the percentages of biodegradation varied between 84% to 99% for the 1-butyl-3-methylimidazolium methanesulfonate the percentages of biodegradation varied between 86% and 98%. The two microorganisms were isolated optimal pH values were 5.5 and 7 with optimal temperatures 30°C and 45°C respectively.

Keywords: Ionic liquid, biodegradation, Closed Bottle test, spectrophotometry