

Title: Combined chemically enhanced sedimentation and ultrafiltration for wastewater treatment

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The increasing wastewater production, is one of the most serious problems in the world, which has to be tackled effectively in the near future. Proper management of different kind of wastewaters such as food and dairy wastewater is a necessity, not an option. Membrane separation technology has many advantages over traditional treatment methods such as less required space, energy and can be easily combined with other methods, like chemical treatments.

In this study, single ultrafiltration (*UF*) and its combination with pretreatment by coagulation/flocculation and sedimentation using coagulant at different pH to treat model dairy wastewater were investigated.

UF membranes with 10, 30 and 50 kDa molecular weight cut-off (*MWCO*) were tested and compared using synthetic dairy wastewater. It was prepared 5 and 10 g/L concentration of skim milk powder and 0.5 and 1 g/L anionic-detergent. Different chemical pretreatments without and with pH adjustment to 4, based on our earlier research work, were carried out in order to know the limits of the process. Ferric chloride ($FeCl_3$) as a low-cost coagulant with 200 mg/L concentration was selected from earlier literature survey. Ultrafiltration fluxes, membrane rejections of organic matter content (*COD*), total dissolved solids (*TDS*) and turbidity were measured and compared. Furthermore, mathematical model was used for calculatinag the membrane resistances, polarization layer and inner porous fouling resistances.

Our results indicated that using chemical pretreatment can improve the efficiency of the ultrafiltration separation process of synthetic dairy wastewater.

Acknowledgements
Authors are grateful for the financial support of the Hungarian State and the European Union (EFOP-3.6.2-16-2017-00010 – RING 2017) and the project Hungarian Science and Research Foundation (OTKA contract number K 115691).

Biography
Szabolcs Kertész completed his PhD in 2011 and is now working for University of Szeged as an associate professor. He has published more than 40 papers in reputed journals.

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Session name/ number: Environmental Science and Technology (Track 20-2)
Category: Poster presentation