Mass transport modelling to estimate the efficiency of nanofiltration application for the recovery of phosphorus from sewage sludge

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ABSTRACT

The polyamide nanofiltration membrane DL has been used for experimental series investigating the filtration of sewage sludge ash eluates as well as model solutions mimicking the real eluates. It is shown that the use of synthesised model solutions makes up an useful tool to study the separation of real solutions in a practical and reproducible way. The DSPM&DE approach has been estimated from the information given in literature about the recent development in quantitative nanofiltration mass transport modelling to be a promising methodology for modelling the filtration process studied in this work. A first application of the model using a software tool described in literature using membrane parameters mainly estimated according to information from the literature was conducted. The comparison between experimental and calculated results showed that the tendency of the rejections could be predicted by the model for most of the used ions.

Keywords: Nanofiltration; Modelling; Sewage sludge ash; Phosphorus recovery

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