

**APPLICATION OF MEMBRANE SEPARATION AND ADSORPTION FOR
NUTRIENT RECOVERY FROM DAIRY WASTE WATERS**

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Abstract

Among the current environmental challenges facing humanity is the protection of water in quantity and quality. The objective of reduce to zero the generation of waste in productive activities by applying the concept of circular economy has led to the emergence of proposals for the production of biomaterials capable of contributing to environmental protection and that do not imply huge investments of money. As a good example of these proposals, biochar had to be mentioned which is a material with excellent adsorbent properties, with low production costs and that is made with any type of organic matter such as agricultural waste. In this work a nanoparticle-modified ultrafiltration membrane was used as a pre-treatment method prior to ammonium adsorption. As adsorbent for ammonium removal alkaline modified biochar produced from banana leaves were used. The characterization of biochar and the research about kinetics and isotherm models obtained after batch experiments. The general results obtained after the combination of membrane filtration and adsorption are promising and reflect a satisfactory ammonium removal percentage, and these results prove that biochar would be a good adsorbent for nutrient recovery from wastewaters.

Keywords: ammonium removal, water treatment, membrane filtration, biochar, adsorption.