

## Colloidal matter separation of industrial wastewaters from Galați City area by semipermeable membranes

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**Abstract.** Various studies have shown that ultrafiltration membranes are successfully involved in the removal process of most organic pollutants from wastewater. In this context, the hydrodynamic characteristics of a modified cellulose ultrafiltration membrane were evaluated. This composite membrane type has been proposed for the separation of colloidal matter from industrial wastewater in Galați City area (Romania). Another purpose of this paper was also to determine the volume flows, along with the permeate and concentrate fluxes through the technical membrane taken under study. Furthermore, a comparative analysis of three samples of industrial water from Galați City area in terms of the degree of contamination was performed. Surface modification was evaluated using scanning electron microscopy. Results indicated that the industrial wastewater from the steel factory Liberty Galati was significantly more impure than the water from Cătușa Lake, which in turn was more impure than the water from Siret River, as indicated by comparative analysis of the water samples subjected to the ultrafiltration operation through semipermeable technical membranes. It was shown that the decrease of the permeate flux at the modified cellulosic membrane was accentuated in the first moments, probably due to the clogging of the surface pores that present an uneven distribution. The results of the present study show that the cellulosic membrane used has pore diameters which correspond to the values recommended for the retention of colloidal matter.

**Keywords:** ultrafiltration; UF membrane; scanning electron microscopy; permeate and concentrate fluxes.

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