

Fouling of polymeric membranes

Gabriela CIOBANU^{a*}, Gabriela CARJA^a, Lacramioara ISTRATI^b and Maria HARJA^a

^a*Faculty of Chemical Engineering, "Gh. Asachi" Technical University of Iasi, D. Mangeron 71 A Blvd., Iasi, 700050, Romania*

^b*Faculty of Engineering, University of Bacau, Calea Marasesti 157, Bacau, 600115, Romania*

Abstract In recent years, membrane processes have emerged as a viable technology for water and wastewater treatment. A successfully implemented membrane technology can produce water of superior quality from a variety of source waters compared to conventional technologies. Fouling is the most common problem encountered in all membrane separation processes. As fouling occurs, flux decreases with time. The aim of this research is to study the relative effects of calcium and magnesium on solubility limits of silica in reverse osmosis system. The effect of initial silica concentration on membrane fouling was investigated, as well as the effect of hardness and varying the ratio of calcium to magnesium. Results indicated that magnesium hardness was more effective than calcium hardness in silica polymerization rate. The best operating pH range is below 6.5, which precludes polymerization as well as precipitation of silicates.

Keywords: polymeric membranes, membrane fouling, wastewaters.
