

DEVELOPMENT OF CELLULOSE ACETATE MEMBRANES FOR WATER APPLICATIONS

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Human activities, inadvertent added phosphates to freshwater bodies which has been caused eutrophication. Manifested by abundant development of aquatic plants, growth of algae, with some kinds of them being toxic, and to balance disturbance of organisms present in water, results in the deterioration of water quality and limits its usage. Sever cases, provoke oxygen depletion, which affects fish and other aquatic life, microorganism and insects' growth as well as it causes natural resorts degradation. Therefore, the removal of phosphates from eutrophic waters and microorganisms are crucial to avoid some problems, especially near urban areas.

Cellulose acetate (CA) membranes have been used for reverse osmosis membranes for converting impaired water into fresh-water. Several components can be incorporated into cellulose structure allowing the development of membranes with different applications.

The aim of this work was to incorporate silver and/or aluminium nanoparticles into CA membranes for phosphates and microorganisms removals applications. Therefore, the CA membranes were obtained by solution casting, where silver and/or aluminium nanoparticles were chemical reduced *in-situ*. Kinetic experiments revealed the efficiency of the developed CA membranes/aluminium to phosphate removal. Antibacterial tests with CA membranes/silver before and after water treatment confirmed a significant microorganisms reduction.