

# Formation of plasma-polymerized top layers on composite membranes: Influence on separation efficiency

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**Abstract:** Plasma-polymerized reverse osmosis membranes were prepared by deposition of an allylamine plasma-polymerized top layer onto a cellulose ester surface. Their separation performance was highly dependent on the formation of the top layer, which was itself determined by the plasma polymerization conditions. The density and the thickness of the plasma-deposited polymer top layer influence the membrane flux, while the ability of the membrane to reject salt relies on the degree of polymer cross-linking, which is in turn related to the transfer of plasma energy into monomer molecules during plasma polymerization. The separation efficiency of the multilayer reverse osmosis composite membrane can be optimized by choosing appropriate plasma conditions. A graph is presented. © 2009 Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim.

**Author Keywords:** Composite membranes; Cross -linking degree; Deposition; Multilayers; Plasma polymerization; Separation efficiency

**Index Keywords:** Allyl amine; Cellulose esters; Cross -linking degree; Monomer molecules; Plasma polymerization; Plasma conditions; Plasma energy; Polymerization conditions; Reverse osmosis composite membrane; Separation efficiency; Separation performance; Composite membranes; Esters; Multilayers; Plasma deposition; Plasma polymerization; Plasmas; Polymers; Reverse osmosis; Osmosis membranes

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