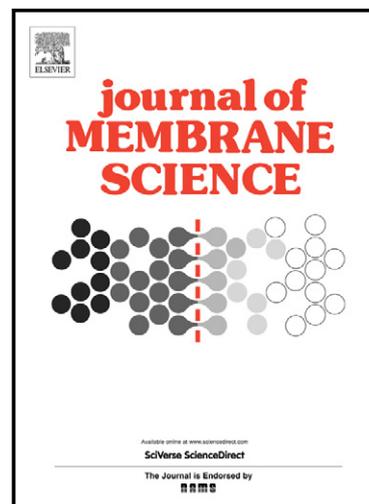


Author's Accepted Manuscript

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www.elsevier.com/locate/memsci

PII: S0376-7388(15)00395-6
DOI: <http://dx.doi.org/10.1016/j.memsci.2015.04.064>
Reference: MEMSCI13674

To appear in: *Journal of Membrane Science*

Received date: 17 March 2015

Revised date: 24 April 2015

Accepted date: 25 April 2015

Cite this article as: Patrícia I. Morgado, Ana Aguiar-Ricardo, Ilídio J. Correia, Asymmetric membranes as ideal wound dressings: An overview on production methods, structure, properties and performance relationship, *Journal of Membrane Science*, <http://dx.doi.org/10.1016/j.memsci.2015.04.064>

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Asymmetric membranes as ideal wound dressings: An overview on production methods, structure, properties and performance relationship

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Abstract

Healing a wound is a process that comprises sequential steps aimed to restore the structure and function of damaged cells and tissues. Since the antiquity, to promote an effective wound healing, different materials have been used to cover the wound. Nowadays, dressings that are able to mimic the structure and composition of skin are specifically designed to exhibit several required functions. To cope with this demand, different wound dressings have been produced using conventional techniques, during the last two decades. Among them, asymmetric ones present a dense top layer to protect the wound from physical damage and pathogen penetration and an inner porous layer that allows the exudates absorption, keeping the moisturized environment needed for effective skin regeneration. However, the production methods used so far, wet- and dry/wet-phase inversion techniques, present some limitations such as the use of toxic organic solvents, the lack of polymers variety and are very time-consuming. In addition, taking into account the worldwide economic status, sustainable procedures, like supercritical carbon dioxide (scCO₂) – assisted phase inversion and electrospinning techniques can be adopted to produce suitable dressings for wound-management.

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