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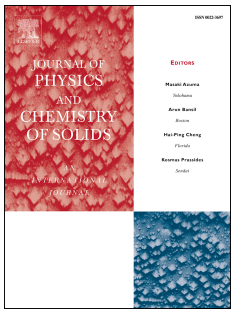

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PII: S0022-3697(17)32149-2

DOI: 10.1016/j.jpcs.2018.06.007

Reference: PCS 8621

To appear in: *Journal of Physics and Chemistry of Solids*

Received Date: 8 November 2017

Revised Date: 4 June 2018

Accepted Date: 5 June 2018

Please cite this article as: K.N. Pandiyaraj, M.C. RamKumar, A.A. Kumar, P.V.A. Padmanabhan, A.M. Trimukhe, R.R. Deshmukh, P. Cools, R. Morent, N. De Geyter, V. Kumar, P. Gopinath, S.K. Jaganathan, Influence of operating parameters on development of polyethylene oxide-like coatings on the surfaces of polypropylene films by atmospheric pressure cold plasma jet-assisted polymerization to enhance their antifouling properties, *Journal of Physics and Chemistry of Solids* (2018), doi: 10.1016/j.jpcs.2018.06.007.

Influence of operating parameters on development of polyethylene oxide-like coatings on the surfaces of polypropylene films by atmospheric pressure cold plasma jet-assisted polymerization to enhance their antifouling properties

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Abstract

In this study, we investigated the deposition of a polyethylene oxide (PEO)-like coating on the surfaces of polypropylene (PP) films via atmospheric pressure cold plasma jet-assisted polymerization using ethylene glycol dimethyl ether as a precursor. The PEO-like coatings were deposited using different operating parameters (deposition potential and monomer flow rates) and we determined their effects on the film properties, such as the topography, surface chemistry, and surface free energy, based on atomic force microscopy, scanning electron microscopy, transmission electron microscopy, X-ray photoelectron spectroscopy, and contact angle measurements. The interfacial tension between various biological liquids and the PEO-like film surfaces were studied in detail. The antifouling properties of the PEO-like films were examined *in vitro*, including protein adsorption and platelet adhesion. The results showed that the retention of the PEO-like character and the formation of new functional groups were highly dependent on the operating parameters. Significant changes in the film topography and