

## Optimization of electrospinning parameters for producing carrageenan-PVA based nanofibers film

*Bakar, Noor Fitrah Abu<sup>a</sup>; Salihfudin, Mohd Aizuddin<sup>a</sup>; Othman, Nur Hidayati<sup>a</sup>; Adam, Fatmawati<sup>b</sup>; Naim, Mohd Nazli<sup>c</sup>; Alias, Nur Hashimah<sup>a</sup>; Rahman, Norazah Abd<sup>a</sup>*

<sup>a</sup> School of Chemical Engineering, College of Engineering, Universiti Teknologi MARA, Selangor, Shah Alam, 40450, Malaysia

<sup>b</sup> Faculty of Chemical and Process Engineering Technology, Universiti Malaysia Pahang, Lebuhr Persiaran Tun Khalil Yaakob, Pahang, Kuantan, 26300, Malaysia

<sup>c</sup> Department of Process and Food Engineering, Faculty of Engineering, Universiti Putra Malaysia, Selangor, Serdang, 43400, Malaysia

### ABSTRACT

Formulation of  $\kappa$ -Carrageenan/polyvinyl alcohol (PVA) based and optimization of electrospinning parameters for producing electrospun nanofibre were investigated. Two types of PVA polymers; fully hydrolyzed (FH) and partially hydrolyzed (PH), were used as crosslink agents or co-polymer with the ratio of  $\kappa$ -Carrageenan to PVA was 70 : 30. Nanofibers with  $\kappa$ -Carrageenan/PVA FH blend produced a uniform and smooth nanofiber at 12 w/v % of PVA FH concentration. Both types of PVA promoted the hydrophilicity of the nanofiber with a slight absorption rate for  $\kappa$ -Carrageenan/PVA PH nanofiber. The formulation of 1 w/v %  $\kappa$ -Carrageenan and 12 w/v % PVA FH was used to optimize the electrospinning parameters by varying voltage, distance and flowrate using response surface methodology (RSM). The optimum electrospinning parameters for voltage, distance and flowrate for the respective formulation were 15.07 kV, 12.40 cm, and 0.435 ml/h, respectively.

### KEYWORDS

Electrospinning; Hydrolysis; Hydrophilicity

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