
33rd Conference of The European Colloid and Interface Society


BOOK OF ABSTRACTS

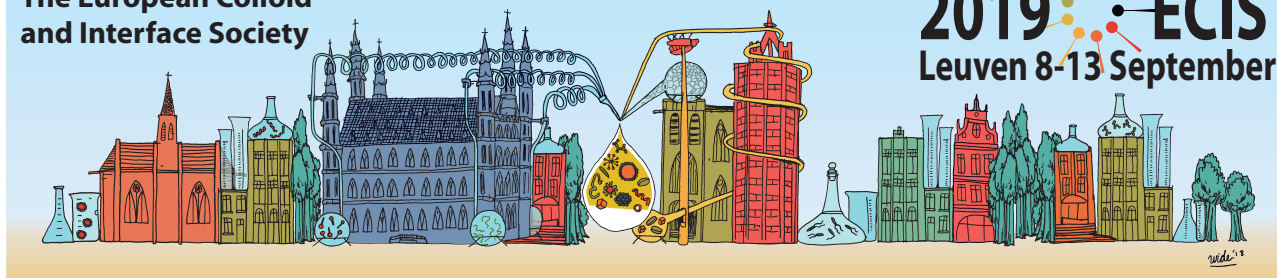
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Physico-chemical and mechanical properties of edible zein films from aqueous nanoparticle suspensions

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Massive accumulation of non-biodegradable waste, as a consequence of overconsumption of plastic and other synthetic materials over the years, has led to the need for developing biodegradable packaging materials.^[1] Zein, corn protein, is well known for its film forming and coating abilities, mostly casted or spayed as aqueous ethanol solution.^[2] However, the use of organic solvents in many food applications is unwanted.

Aim of this work was to investigate physico-chemical and mechanical properties of zein films casted from nanoparticle suspensions in water, with and without plasticizer, and compare it to zein films casted from aqueous ethanol solutions. In order to accomplish that, solubility, moisture absorption, water vapor permeability, tensile strength, elongation at brake, Young's modulus and FTIR spectra of various zein films were determined. Results showed that barrier properties of zein films from aqueous nanoparticle suspensions are comparable to properties of zein films from solution. It was also shown that plasticizer, propylene glycol, affects properties of zein films. There were no differences in mechanical properties of zein films from suspensions and from solutions. Finally, FTIR analysis suggests increased content of β -sheet structures in zein suspension films, when compared to zein solution films.

References

[1] Y. Cao *et al.*, *RSC Adv.*, 7 **2017**, 2180-2185.

[2] B. Ghanbarzadeh, *et al.*, *LWT*, 40 **2007**, 1191-1197.