

# BOOK of ABSTRACTS



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## PREPARATION OF ZEIN NANOPARTICLES AND SELF-STANDING FILM

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Zein is a plant protein and it is major protein of corn kernel. It is non-toxic, biodegradable and biocompatible natural compound, so it is safe for use in human nutrition. It is water insoluble protein, and it can be dissolved in different organic solvents or binary solvent mixtures, i.e. aqueous ethanol. Using the right methods, zein forms different structures, such as micro- and nanoparticles, continuous films, gels, fibers, etc. In this paper, zein nanoparticles were prepared by antisolvent precipitation of zein from aqueous ethanol solutions, in water. Influence of different parameters on preparation process and prepared nanoparticles was tested. Also, self-standing films were casted from nanoparticle suspensions, with and without plasticizer. Thickness and surface roughness of different films was obtained. Results showed that ethanol share, concentration of zein stock solution and zein solution/water ratio affect the size of prepared nanoparticles. It was also found that concentration of suspensions has little influence on pH of suspension. Further, it was shown that size of nanoparticles and additions of plasticizer do not affect film thickness, but have a big influence on its surface roughness. Overall results showed that properties of zein nanoparticles and self-standing films can be controlled by variation of different preparation parameters.

**Keywords:** *zein, protein, nanoparticles, self-standing films*

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