

**Supplementary Material**  
**for**  
**“Pickering Emulsions stabilized by Ethyl Cellulose Nanoparticles”**

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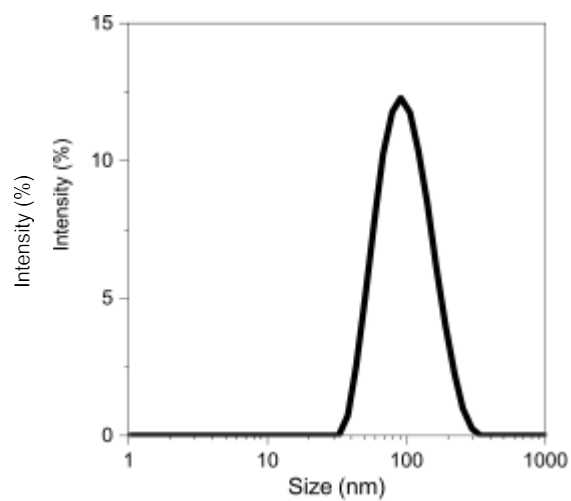
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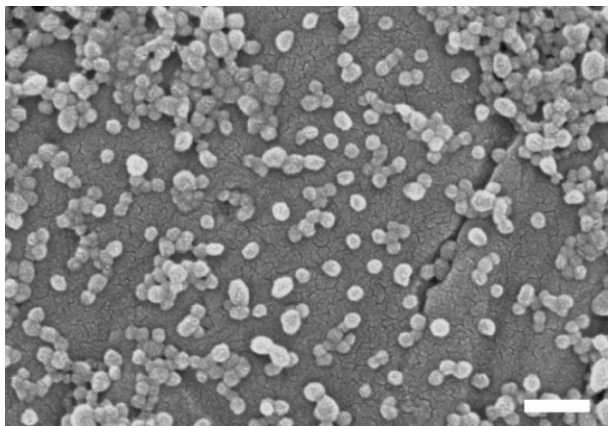
<sup>1</sup>Heleen.V.M. Kibbelaar and Riande. I. Dekker contributed equally

**Abstract**

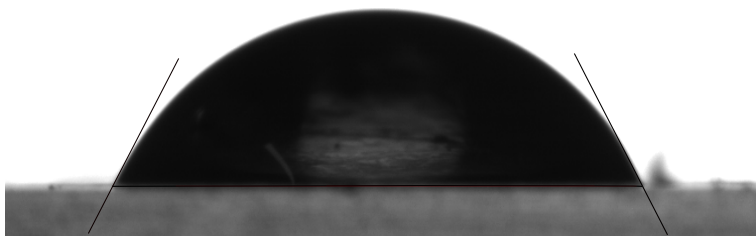
This document provides supporting figures to accompany the main text; it gives more details about the size (DLS and SEM) and zeta potential distribution of the ethyl cellulose nanoparticles (ECNPs) and the interfacial tension measurements with free ethyl cellulose and ECNPs at the soybean oil - water interface.



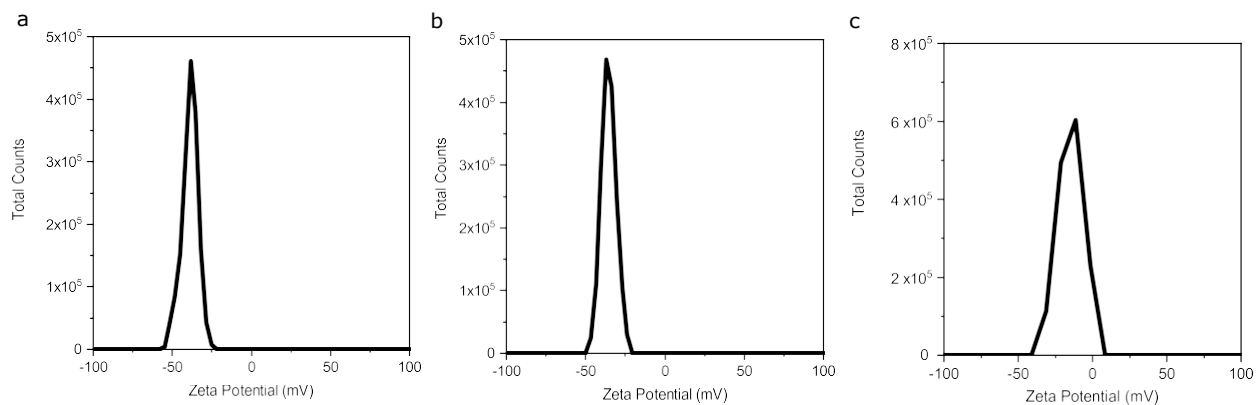
SUPPL. FIG. 1. Intensity weighted size distribution curve of 100 nm for the prepared ECNPs which are used for the stabilization of the Pickering emulsions. A mean average particle size of 100 nm is found.



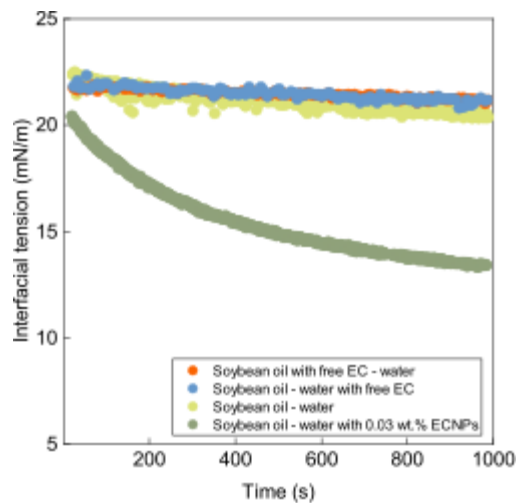
SUPPL. FIG. 2. SEM image of ECNPs (scale bar 250 nm)



SUPPL. FIG. 3. Contact angle of a water droplet on top of an ethyl cellulose layer. To get an estimate of the contact angle of the ECNPs at the oil/water interface of the emulsion, we form a water droplet in air on top of a glass substrate coated with ethyl cellulose. We assume that this ethyl cellulose layer has the same surface properties as the ECNPs. We find a contact angle of  $62^\circ$ , implying that the ECNPs are slightly hydrophilic, and will be able to stabilize an o/w emulsion



SUPPL. FIG. 4. Zeta potential distribution of the ECNPs (a) and (b) ECNPs in the presence of the dye Direct Yellow. The dye does not affect the zeta potential of the particles. (c) Zeta potential distribution of the ECNPs in the presence of 100 mM KCl. KCl screens the negative charge of the ECNPs, resulting in a less negative zetapotential. This enables the particles to go the oil/water interfaces



SUPPL. FIG. 5. Interfacial tension measurement of soybean oil - water, soybean oil with free EC - water, soybean oil - water with free EC and soybean oil - water with 0.03 wt. % ECNPs. The results clearly show that free EC does not affect the interfacial tension, and only ECNPs cause this reduction.