

# Supporting Information

## Conducting PEDOT Nanoparticles: Controlling Colloidal Stability and Electrical Properties

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## Photographs showing the Macroscopic Stability

(a)

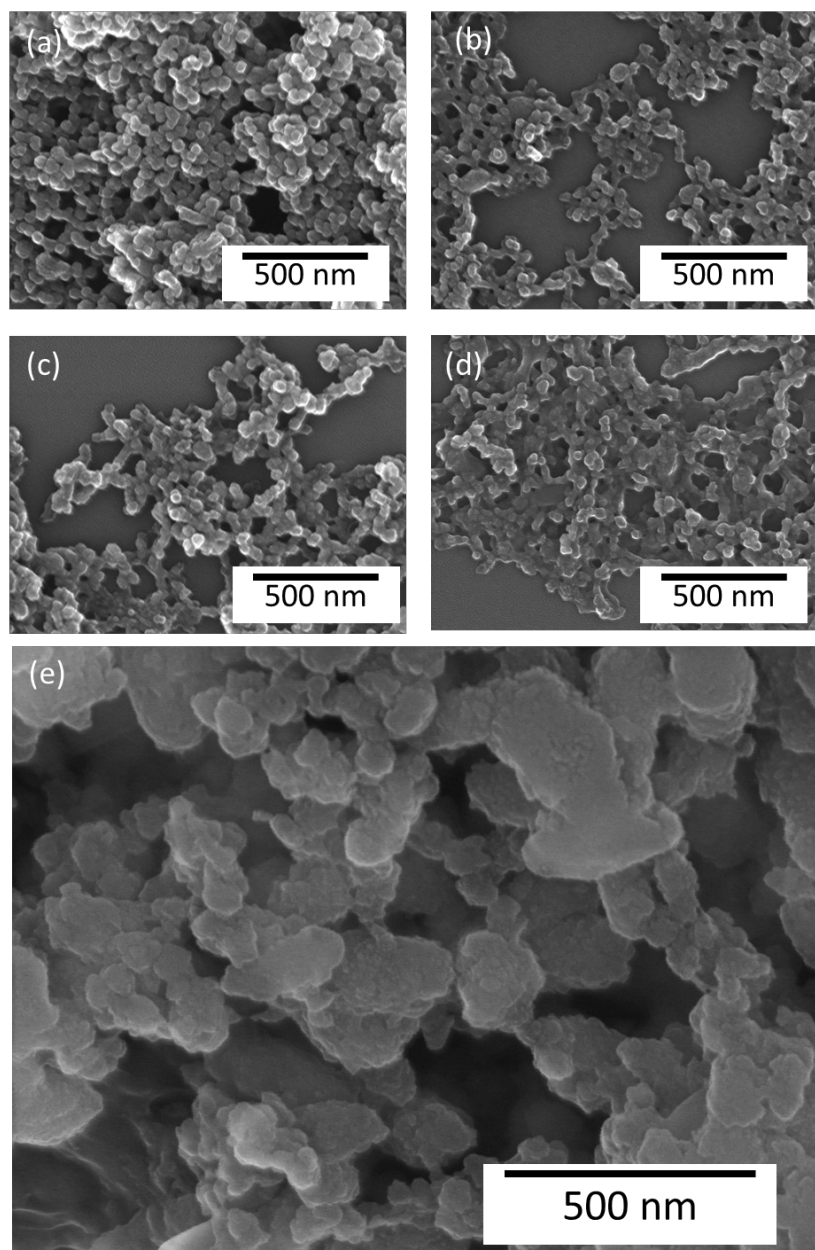


(b)



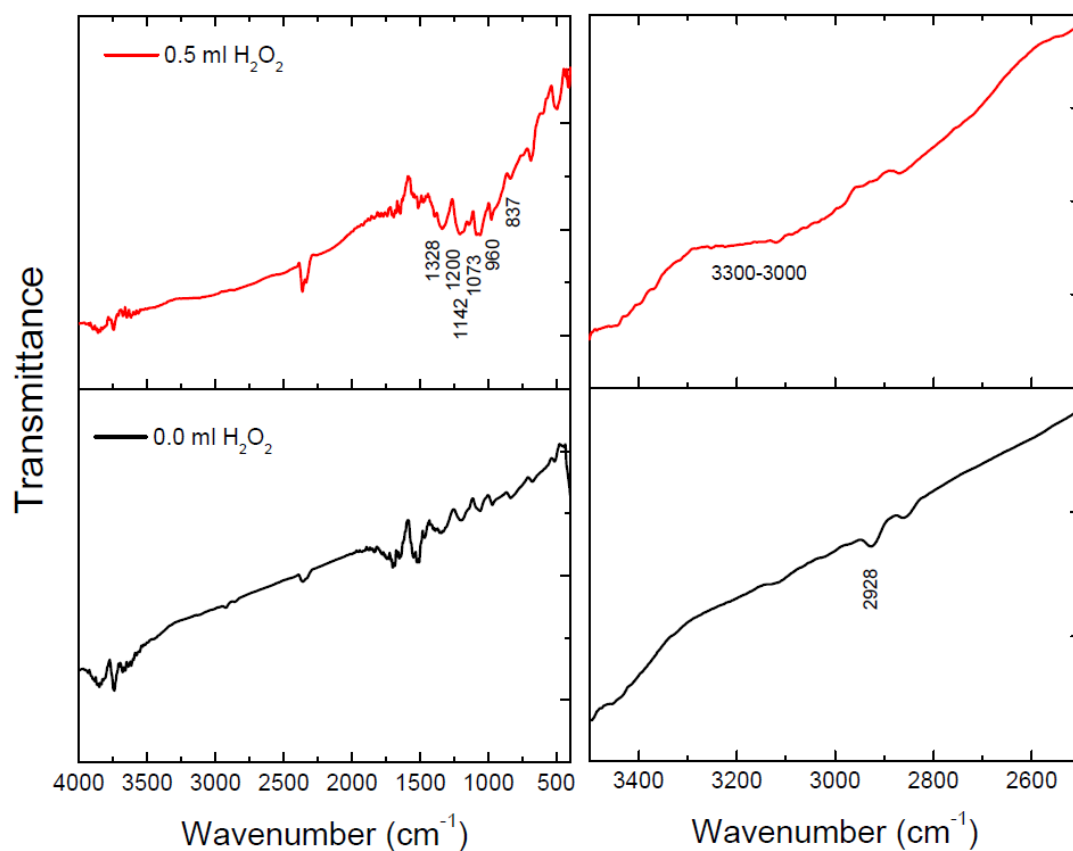
**Figure S1.** Images of PEDOT nanoparticle suspensions prepared at EDOT:FeTos molar ratio of 1:1: (a) without H<sub>2</sub>O<sub>2</sub> and (b) with H<sub>2</sub>O<sub>2</sub>.

## SEM Images



**Figure S2.** SEM images of PEDOT nanoparticles with  $\text{H}_2\text{O}_2$  (molar ratio EDOT:FeTos 1:1): (a)  $7.5 \times 10^{-2}$  M (b)  $3.7 \times 10^{-2}$  M, (c)  $1.5 \times 10^{-2}$  M, (d)  $7.5 \times 10^{-3}$  M, and (e) without  $\text{H}_2\text{O}_2$ .

## FTIR analysis



**Figure S3.** FTIR spectra of nanoparticles, without and with  $7.5 \times 10^{-2}$  M of  $\text{H}_2\text{O}_2$ , from 4000 to 400  $\text{cm}^{-1}$  and for a zoom in the region between 3500 and 2500  $\text{cm}^{-1}$ .

FTIR analysis was recorded for PEDOT nanoparticles to evidence the presence of hydroxyl groups in the polymer backbone. The typical vibrational modes of PEDOT are observed. At  $1328 \text{ cm}^{-1}$ , the C=C stretching appears; the bands at 1200, 1142, and  $1073 \text{ cm}^{-1}$  correspond to the C–O–C bond stretching in the ethylene dioxy(alkylenedioxy) group. The bands at 960 and  $837 \text{ cm}^{-1}$  correspond to the presence of the C–S bond in the thiophene ring. In the region between 3500 and  $2500 \text{ cm}^{-1}$ , a band related to the C–H stretching is observed at  $2928 \text{ cm}^{-1}$  in the sample without  $\text{H}_2\text{O}_2$ . However, in nanoparticles prepared with  $\text{H}_2\text{O}_2$ , a broad band in the range of  $3300\text{--}3000 \text{ cm}^{-1}$  is present, ascribable to hydroxide groups in the polymer chains.