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Calcinated tea and cellulose composite films and its dielectric and lead adsorption properties

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Highlights

- Calcinated tea based cellulose composite (CTCC) film was prepared by blending method.
- The CTCC film shows 4 times higher dielectric constant than the pure cellulose.
- The CTCC film demonstrates lead adsorption, depending on the CT content and pH.
- The CTCC film is useful for sensor, flexible capacitor and metal adsorption.

Abstract:

In this paper, calcinated tea and cellulose composite (CTCC) films were fabricated via solution casting method. Chemical structure, morphology, crystallinity and thermal stability of the fabricated films were characterized by using Fourier transform infrared spectroscopy, scanning electron microscopy, X-ray diffraction and thermogravimetric analysis. The effect of calcinated tea loading on the properties of the prepared CTCC films was studied. The results suggest that the prepared CTCC films show higher mechanical properties, thermal stability and dielectric constant than the neat cellulose film. In addition, the CTCC films adsorb Pb^{2+} ions and its adsorption

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