

عنوان مقاله:

Preparation and Measuring of Thermal Conductivity of Cellulose Acetate/ Multi-Walled Carbon Nanotube Sheets by Electrospinning technique with Oxygen-enriched Method to Preserve Food Warmth in Food Packaging

محل انتشار:

هفتمین همایش بین المللی مطالعات میان رشته ای در صنایع غذایی و علوم تغذیه ایران (سال: 1402)

تعداد صفحات اصل مقاله: 15

نویسندگان:

Negin Rastegar - Department of Occupational Health, Tehran University of Medical Science, Tehran, Iran

Farideh Golbabaee - Department of Occupational Health, Tehran University of Medical Science, Tehran, Iran

Saba Kalantari - Department of Occupational Health, Tehran University of Medical Science, Tehran, Iran

Parvaneh Sangpour - Department of Nanotechnology and Advanced Materials, Materials and Energy Research Center, Karaj, Iran

Mohammad Reza Monazzam - Department of Occupational Health, Tehran University of Medical Science, Tehran, Iran

Kamal Azam - Department of Epidemiology and Biostatistics, Tehran University of Medical Science, Tehran, Iran

خلاصه مقاله:

In order to prolong the shelf life of perishable food during transfer, biodegradable packaging materials must have a lower thermal conductivity. This will improve consumer safety and lower postharvest losses. Hence, this study uses cellulose acetate (CA), the low thermal conductive biodegradable polymer, and multi-walled carbon nanotubes (MWCNTs), an ultra-reducing thermal conductivity adding, to produce the CA/MWCNT composite nanofibrous media via electrospinning technique with oxygen-enriched method. Therefore, two separate solutions of CA and CA/MWCNT solutions were made by acetone/ dimethylacetamide (۲:۱) with the oxygen-enriched method by an oxygen capsule. The morphology and chemical structures of nanofibers were screened by SEM and FTIR. Eventually, the thermal conductivity of electrospun nanofibrous media was calculated by the two-plate Togmeter device test method based on BS ۴۷۴۵:۲۰۰۵. According to SEM images, by oxygen-enriched method with an oxygen capsule, the intensity reaction between CA and MWCNTs was substantial because of whole covered CA nanofibers by MWCNTs, and its media was exploited to compute the thermal conductivity of CA/MWCNT. Moreover, the outcomes showed that the thermal conductivity of the CA/MWCNTs sheet was at  $0.015$  ( .K ) with  $0.015 \pm 0.008$  mm thickness. Therefore, CA/MWCNTs nanocomposite media has excellent potential to be applied as ultra-low thermal electrospun media to preserve food warmth in food packaging.

کلمات کلیدی:

Food Packaging, Thermal conductivity, Biodegradable polymer, Carbon nanotubes, Nanocomposite, Oxygen-enriched

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1930985>



