





## Published Researches الأبحاث المنشورة



Title عنوان البحث	Branched nanofibers with tiny diameters for air filtration via one-step electrospinning
Author الناشر	Bilal Zaarour, Hussen Tina, Lei Zhu, XiangYu Jin
Source Title اسم المجلة	Journal of Industrial Textiles
ISSN	15280837, 15308057
Q	Q1
Link رابط البحث من موقع المجلة	<a href="https://journals.sagepub.com/doi/full/10.1177/1528083720923773#tab-contributors">https://journals.sagepub.com/doi/full/10.1177/1528083720923773#tab-contributors</a>
Abstract خلاصة	<p>Engineering the surface morphology of fibers has been attracting significant consideration in various areas and applications. In this study, polyvinylidene fluoride (PVDF) branched nanofibers with a diameter of less than 50 nm are electrospun directly at a low relative humidity by adding tetrabutylammonium chloride. The effects of the branched structure on the specific surface area and pore size distribution are investigated, and the filtration properties of the air filter based on branched nanofiber webs with different basis weights are studied. The results exhibit that the air filter based on PVDF branched nanofibers with the basis weight of 1 g/m<sup>2</sup> has an outstanding filtration efficiency (99.999%) to 0.26 μm sodium chloride particles under the pressure drop of 126.17 Pa. We believe that this study can be used as a useful reference for the preparation of branched nanofibers through one-step electrospinning.</p>

 <b>Published Researches</b> <b>الأبحاث المنشورة</b> 	
<b>Title</b> عنوان البحث	Enhanced piezoelectric performance of electrospun PVDF nanofibers by regulating the solvent systems
<b>Author</b> الناشر	Bilal Zaarour, Wanjun Liu
<b>Source Title</b> اسم المجلة	Journal of Engineered Fibers and Fabrics
<b>ISSN</b>	15589250
<b>Q</b>	Q2
<b>Link</b> رابط البحث من موقع المجلة	<a href="https://journals.sagepub.com/doi/full/10.1177/15589250221125437">https://journals.sagepub.com/doi/full/10.1177/15589250221125437</a>
<b>Abstract</b> خلاصة	<p>In recent years, the attention of researchers has been focused on enhancing the electrical outputs of energy harvesting devices. This study reports the generation and characterization of electrospun polyvinylidene fluoride (PVDF) nanofiber webs obtained from different solvents (Acetone (ACE), ACE: N, N-dimethylformamide (DMF) /3:1, ACE: DMF/1:1, ACE: DMF/1:3, and DMF). These electrospun webs will be used as active layers for piezoelectric nanogenerator (PENG). We found that fibers electrospun using DMF have the highest phase content (<math>F(\beta)</math>), while fibers electrospun using ACE have the lowest one. Furthermore, the results show that PENG based on fiber web electrospun using DMF has the highest electrical outputs, whereas, the lowest electrical outputs were for PENG based on fiber web electrospun using ACE. We believe this work can serve as a good reference for investigating the effect of solvent systems on diameters of fibers, crystalline phases, and piezoelectric properties.</p>



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Title عنوان البحث	Influence of Surface Plasmons on the Reflectivity Spectra of Dyed Fabrics
Author الناشر	Kamal Kayed, Bilal Zaarour, Mayada Issa, Shaza Alshaal
Source Title اسم المجلة	Plasmonics
ISSN	15571955
Q	Q2
Link رابط البحث من موقع المجلة	<a href="https://link.springer.com/article/10.1007/s11468-022-01723-7">https://link.springer.com/article/10.1007/s11468-022-01723-7</a>
Abstract خلاصة	<p>In this work, we study a unique phenomenon, which is the formation of surface plasmons on the surface of woven cotton fabrics dyed with reactive red dye and the effect of dye concentration on the surface plasmonic activity. The results show that a peak was observed in the optical reflectivity spectra, which is an extension of the plasma edge. We called it the plasma peak. It represents the growth and decay phases of the plasmonic activity. Furthermore, the effect of dye concentration on both the plasma edge and the main characteristics of the plasma peak (position, spectral width, and intensity) is investigated. On the other hand, the dye concentration that results in the highest optical activity of surface plasmons was recorded (<math>c = 2\%</math>).</p>



## Published Researches الأبحاث المنشورة



Title عنوان البحث	A comprehensive review on branched nanofibers: Preparations, strategies, and applications
Author الناشر	Bilal Zaarour, Mohammed Firas Alhinnawi
Source Title اسم المجلة	Journal of Industrial Textiles
ISSN	15280837, 15308057
Q	Q1
Link رابط البحث من موقع المجلة	<a href="https://journals.sagepub.com/doi/full/10.1177/15280837221083031#tab-contributors">https://journals.sagepub.com/doi/full/10.1177/15280837221083031#tab-contributors</a>
Abstract خلاصة	<p>Engineering surface morphologies of nanofibers has been attracting significant consideration in numerous fields and applications. Among different methods of generating nanofibers, electrospinning is the most widely adopted technique owing to the ease of forming nanofibers with an extensive range of properties and its exceptional advantages, such as the variety of shapes and sizes, as well as the adaptable porosity of nanofiber webs. The branched structure is considered one of the most attractive structures for scientific researchers due to its outstanding properties (e.g., high-specific surface area and extremely tiny diameters of branched nanofibers). Therefore, this work is the first one that summarizes the strategies and methods, reported so far, of producing branched nanofibers of different materials. The material types, formation mechanisms, characterizations, and applications of the branched nanofibers generated through different techniques will be discussed in detail in this study. We believe this work can be served as an important reference for the preparations, strategies, and applications of the branched nanofibers.</p>