Utilizing electro-spinning technique in various functional textiles industries

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**Abstract:**
Manufacturing of nanofibers is one of the major developments in nanotechnology nowadays. These nanofibers could be produced by a new technique named Electro-spinning. It is a simple and effective technique for producing nanofibers from a rich variety of materials that include polymers and chemical compounds, with diameters ranging from several nanometers to several micrometers. The problem of this study is; the scarcity of Arab studies interested in this technique and its applications in Arab world. Therefore, this study focuses on clearing the characterization of electro-spinning technique, and understanding of the relationship between the nature of process and the morphology of produced nanofibers. In addition, this study presents a comprehensive overview of the wide range of polymeric materials used in this process. This study also focuses on all applications, whose products depend basically on the nanofibers produced by electro-spinning, and highlights a comprehensive statistical presentation of scientific research that has been produced related to this technology. This study showed that since 2000, there were an approximate 20% increase annually in the number of journal articles published around the world that use the concept of “electro-spinning” in their research. Statistics have shown that USA, China and South Korea own nearly 70% of published articles, and the global market of nanofibers products has increased from 51.8 million dollars in 2007 to 67.1 million dollars in 2008 and to 80.7 million dollars in 2009, and to 101.5 million dollars by the end of 2010. This remarkable development has created an important strong economic market for nanofibers, which in turn led to the increase of manufacturers of nanofibers and production. According to statistics, it is expected that the global market for nanofibers products will grow from 927 million dollars in 2020 to $ 4.3 billion by 2023, with an annual growth rate of 36.2% for the period from 2020 to 2023.

**References:**


**Keywords:**

Nanofibers – spinning - Electro – Nanotechnology - Functional textiles