

Electronic Textiles and Future Challenges

Prof.Emad El-Din Sayed Gohar

Professor of Manufacturing of Clothes, Fashion and Textile Department, Faculty of Human Sciences and Designs, King Abdulaziz University, Jeddah, Saudi Arabia

egohar@kau.edu.sa

Dr. Marwa Mohamed Tharwat

Department of Electrical and Computer Engineering Associate Professor, Faculty of Engineering, King Abdulaziz University ,Jeddah, Saudi Arabia

mmzahrani1@kau.edu.sa

Amal Abdullah Ibrahim Albishri

PhD Student, Manufacturing of Clothes, Fashion and Textile Department, Faculty of Human Sciences and Designs, King Abdulaziz University, Jeddah, Saudi Arabia

aalbishri@kau.edu.sa

Abstract:

The development of textiles was closely related to the major inventions that shaped societies. With the progress of digital technologies, clothes began to appear as a new kind of high-tech products by interfering with electronics. In light of this, this research aimed to clarify the definition and concept of e-textiles (electronic textiles) within various disciplines, and its impact on the successive developments in various fields, which allowed the introduction of many modern and multiple terms. Moreover, the research aimed to reach an understanding of the concept of e-textiles, which is a type of smart clothing in the scope of functional clothing. It also tackled the manufacturing of e-textiles and their electrical properties, and concluded with the future challenges facing e-textiles and the textile industry. The research aims to adopt a theoretical framework on e-textiles, its concept, objectives, the requirements for its basic structure, and the benefits it achieves, in addition to identifying the challenges it faces. While the importance of research is the enrichment of the little Arab intellectual output in this field, it aimed to motivate fashion and textile specialists to work hard to overcome the difficulties that may hinder the manufacture of e-textiles and start their implementation, given its contribution to keeping up with recent developments in the clothing industry. The research applied the descriptive and analytical approach which involves collecting data, including reviewing scientific papers published from 2000 to 2020 that focused on monitoring and analyzing smart clothing or textiles. The research has reached several results, the most important of which is that e-textiles and e-clothing face great challenges, including the reliability of electronics and textile connectors during washing, storage, safety and security in the privacy of data given the increased risk of privacy violation and product sustainability. This may be a result of its quick development as well as the need for cooperation between various disciplines to find an integrated manner for developing e-textiles.

Key Words:

Smart Clothes, Wearable Electronics, Wearable Technology.