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Development and characterization of conductive textile (cotton) for wearable electronics application by printing of conductive inks

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In order to bring significant improvements to human comfort and well-being, intelligent textiles have become more and more in demand. These are characterized by their ability to detect or react to external stimuli of electrical, thermal, chemical, magnetic or other origin by the integration of certain materials or by the application of certain technical coatings on the surface of the textile substrate. Among the intelligent textiles, we find the electronic textiles which are endowed with an electrical property. This property is generally brought to textile substrates through the use of conductive inks. On the one hand, this type of inks can be formulated based on advanced materials such as metallic fillers like silver, conductive polymers such as PEDOT: PSS, carbon-based fillers like graphene, as well as conductive pigments such as copper phthalocyanine. On the other hand, these conductive inks can be applied on the textile surface using several printing methods among which we find the screen printing which constitutes a method of choice because of its speed, its simplicity and its low cost what allows to elaborate intelligent textiles having a wide range of applications namely ECG electrodes, temperature sensors, energy collectors and antennas. The aim of this work is to

formulate conductive inks. These inks were then printed on cotton-based textile substrates by screen printing in order to elaborate smart textiles.

Recent Publications

1. A Boumegnane, A Nadib, O Cherkaoui, M Tahiri. Inkjet printing of silver conductive ink on textiles for wearable electronic applications. *Materials today proceedings*: 2022
2. Boumegnane Abdelkrim. Developing conductive ink formulations for the progressive application of application of printing on textiles. *Journal of Computer engineering and Information Technology*. 2022; 11
3. Omar Cherkaoui, Hayat Bouchoum, Mehdi El Bouchti, Amane Jada, et al. Preparation and characterization of a new low-cost polyacrylonitrile adsorbent. *IOP Conference Series Materials Science and Engineering*. 2020; 827(1):012013.

Speaker Biography

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