

DATA SCIENCE AND MACHINE LEARNING

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Developing conductive ink formulations for the progressive application of application of printing on textiles

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Recently, electronic textiles have attracted more attention due to their properties such as comfort, portability, security and sensitivity. This type of textiles can be produced by applying a technical coating on its surface. In our study, electronic textiles were developed by printing conductive inks on a cotton-based fabric that meet the characteristics of textiles such as good flexibility, lightness and ease of use, which leads to their involvement in various applications such as sensors, antennas and portable transistors. However, these electronic components must have a compatible power supply and this presents one of the challenges for the growth of the wearable electronics field. To address this problem, our work will focus on the development of textile printed components. These can exhibit scalability, flexibility, lightness, biocompatibility unlike conventional energy storage devices which are generally heavy and rigid. These devices can be printed by screen printing which has the advantage of being easy, fast and less expensive on a wide range of fabrics such as bamboo which has excellent mechanical strength, lightness, antibacterial properties, low cost and high durability making it suitable for wearable applications. In addition, the manufacture of electronic devices by printing requires the formulation of a conductive ink based mainly on conductive fillers as an example metals, metal oxides, conductive polymers and carbon fillers and to meet the rapid needs of different electronic applications, the ink must have an appropriate viscosity by rationally using solvents and binders. Despite the ease of this printing method, challenges can be envisaged when manufacturing micro batteries such as production of mechanically stable electrolytes, prevention of electrolyte leakage, wash ability, low durability, low conductivity as well as porosity, flexibility and surface roughness.

Biography

Boumegnane Abdelkrim has a research master's degree in chemistry and valorization process option of the synthesis of biological and therapeutic molecules. He serves for the University Hassan II and higher school of textile and clothing industries. Member of the R&D department and researcher at the REMTEX-ESITH laboratory.

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