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**Study of the thermal, chemical, and electrical behavior of comercial knits superficially functionalized with conductive polymer (polypyrrole)**

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The textile industry is experiencing continuous technological advancements to meet the needs and demands of users, driven by the development of functional and smart textiles. These innovative materials go beyond simple coatings or additions of specific properties, offering advanced characteristics that can bring benefits and functionalities never before imagined. Smart textiles play the role of detecting stimuli, generating responses, and even adapting to the environment in which they are inserted, presenting the potential to revolutionize different areas such as sports, health, and fashion. Smart textiles can be classified as passive, active, and very smart, depending directly on the technologies and materials incorporated during the manufacturing process. This may include the integration of sensors, conductive materials, and other electronic components, allowing the fabric to detect, process, and respond to environmental or user information. This study aims to investigate the physical, chemical, and conductivity characteristics of cotton and viscose knits functionalized using a conductive polymer (polypyrrole) using FTIR, DSC, and 4-point conductivity techniques. In the FTIR analysis, a significant change in the spectrum was observed, showing the disappearance of the peak at wavelengths 3319 cm-1 and 3352 cm-1 in the conductive knits of cotton and viscose, respectively, indicating a change in the material's crystallinity. Additionally, the changes in the FTIR spectrum demonstrated an interaction between the conductive polymer and the textile substrate, resulting in alterations in chemical bonds and their vibrational intensity. DSC evaluated the thermal behavior and interaction of cotton and viscose knits before and after functionalization with polypyrrole. Comparing the fibers of the substrates studied, a greater interaction between the conductive polymer and the fiber was observed in the cotton knit. An increase in thermal stability was also observed in cotton fiber with polypyrrole, which could significantly increase the conductivity of the treated knit. Finally, 4-point conductivity analyses were performed on cotton and viscose knits functionalized with polypyrrole, with higher conductivity observed in the conductive cotton knit (2.37x10-3 S/cm and 1.58x10-4 S/cm, respectively). Therefore, based on thermal and chemical behavior analyses, it was found that cotton fiber underwent more alterations in its structure resulting in higher conductivity compared to viscose fiber, enabling its use, for example, in wearable electronics, sensors, and industrial applications.