



TEXTILE IMPACT PLATES FOR NANOPARTICLES

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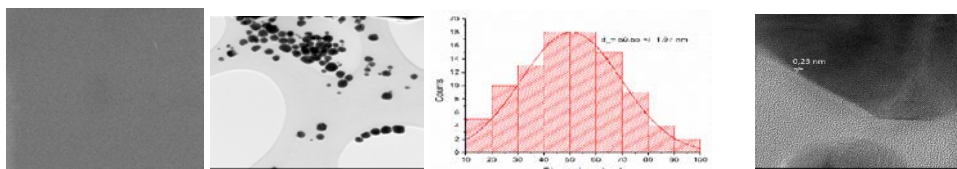
1. ABSTRACT

The emergence of MMM (Metallic Monodisperse Nanoparticles) is getting more frequent, occurring in everyday applications with effect upon consumers and generally upon humans. Nano-Ag and nano-CeO₂ are the most common types of MMM, having relevance for the absorption by inhalation.

The paper presents textile materials with destination impact plates, having different surface architectures and active treatments for functionalization, with influence upon the aging process of nano-Ag and nano-CeO₂.

Woven and knitted fabrics were designed in order to define textile impact plates: 100% cotton, cotton / polyester and 100% polyester, with plain and twill weave for woven fabrics and rib and pique weave for knitted fabrics. Rib and pique weaves were used in order to design the knitted structures, by computing: the superficial fabric cover coefficient, δ_s .

The woven and knitted samples from 100% cotton, cotton/PES blend and 100% PES were treated by impregnation on the laboratory padding machine, drying and condensing on the machine for drying-condensing-heat setting, with the following recipes: 50g/l RUCOSTAR EEE6+20 ml 5% nano-Ag dispersion, or 10% nano-CeO₂ in ethylene glycol, respectively water and 0,5ml acetic acid 60% for products from 100% cotton and PES/cotton and 50g/l NUVA N 2114 liquid with the same percent of nanoparticles but with 1 ml/l acetic acid 60%, in case of 100% PES samples.



Nano-Ag : SEM image, TEM-image, Dispersion diagram, HR-TEM



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The complex characterization: hydrophobic and oleo phobic properties, color change, whitening degree, DCS, FT-IR, SEM and microbiology, evidenced through the obtained results the justness of the selection for: the raw materials (100% cotton, cotton/PES, 100% PES), the weave (plain, twill, rib, pique), the fabric tightness and fabric cover etc. These data allowed the elaboration of textile material's specifications for impact plates.

2. REFERENCES

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