

Chemically modified carbon nanostructures as carriers of enhanced qualities for fabrics performing under critical operational conditions

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Hybridization of carbon nanostructures with fabric fibers enables the realization of multipurpose textiles featured in everyday life applications. [1] Herein, we strategically chemically modified carbon nanostructures to give them desired properties for their subsequent physisorption onto Kevlar, Nomex and VAR fibers. In detail, chitosan was utilized to provide antibacterial properties, benzotriazole for enhanced UV resistance and thiourea for flame retardancy (Figure 1). Following their complete characterization, the samples were tested for their ultraviolet radiation, flame retardant activity, and antibacterial properties respectively, validating our initial approach.[2] This work provides insights to the fabric industry in its quest to fulfil the current technical expectations on protective clothing and can bridge the gap between research and real life applications.

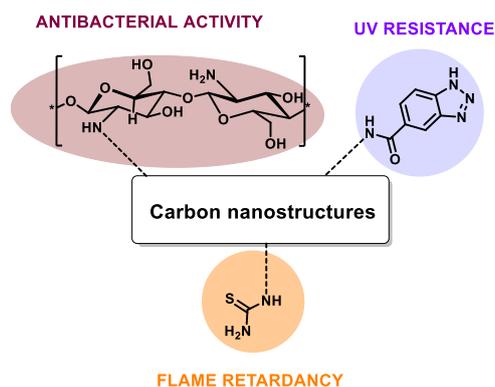


Figure 1: Chemically modified carbon nanostructures with enhanced UV resistance, flame retardancy and antibacterial activity.

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References

- [1] I. K. Sideri and N. Tagmatarchis, *Mater. Horiz.* **8**, 3187 (2021).
- [2] A. Kagkoura, C. Stangel, I. K. Sideri, R. Canton-Vitoria, S. Vasilakos, D. Siamidis, S. Pavlidou, N. Heliopoulos, P. Perimenis and N. Tagmatarchis, Manuscript in preparation.

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