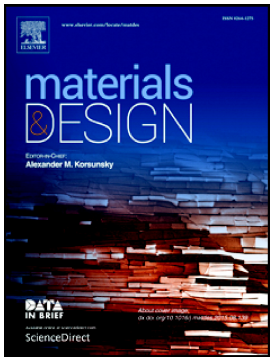

Fire-resistant and highly electrically conductive silk fabrics fabricated with reduced graphene oxide via dry-coating

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Fire-resistant and highly electrically conductive silk fabrics fabricated with reduced graphene oxide via dry-coating

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Abstract

Large-scale and functional silk fabrics were prepared by depositing synthetic graphene oxide (GO) hydrosol onto fabrics via an environmentally friendly "dry-coating" method and subsequently reduced in L-ascorbic acid solution. Through this modification method, the reduced GO (rGO) sheets deposited uniformly on the silk fabric surface were firmly combined with fibres. Up to 19.5 wt% rGO could be deposited relative to the fabric weight. The morphology and structure of prepared rGO-coated silk fabric were characterised by scanning electron microscopy, X-ray diffraction, and Raman spectrometry. In comparison with pristine silk fabric, the modified silk fabric exhibited improved fire resistance and smoke suppression properties. The sheet resistance of rGO-coated silk fabric decreased to 0.13 kΩ/sq. Washing test indicated that the rGO-coated silk fabrics prepared had good durability for common use. The functional silk fabric deposited with 19.5 wt% rGO was

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