

Accepted Manuscript

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PII: S0749-6036(16)30764-9

DOI: [10.1016/j.spmi.2016.11.023](https://doi.org/10.1016/j.spmi.2016.11.023)

Reference: YSPMI 4657

To appear in: *Superlattices and Microstructures*

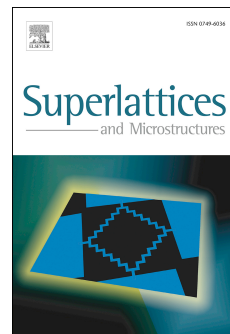
Received Date: 23 August 2016

Revised Date: 13 November 2016

Accepted Date: 14 November 2016

Please cite this article as: S. Veltri, E. Sokullu, M. Barberio, M.A. Gauthier, P. Antici, Synthesis and characterization of thin-transparent nanostructured films for surface protection, *Superlattices and Microstructures* (2016), doi: 10.1016/j.spmi.2016.11.023.

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Synthesis and Characterization of thin-transparent nanostructured films for surface protection

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Abstract

This work demonstrates that very thin and optically transparent nanocomposite films can be conveniently applied on surface materials, displaying potent antibacterial properties without affecting the aesthetics of the underlying material. In our approach we propose new composite materials, which ensure the surface protection by inactivating the bacteria before a biofilm can be formed. The films contain very small loadings of TiO₂, graphene, or fullerene, and can easily be applied on large surfaces using conventional brushes or air-brushes. These nanocomposite films are very promising candidates for the preservation of statues, mosaics, floors, buildings, and other objects that are exposed to challenging environmental conditions such as Architectonical Heritage or building materials (materials featuring stone, pigments, bronze, granite, marble, and glass).

Keywords: nanostructured film, graphene, fullerenes, surface protection, TiO₂ Nanoparticle

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