

## عنوان مقاله:

STUDY OF THE MICROSTRUCTURE AND ANTIBACTERIAL BEHAVIOR OF THE AS-SPRAYED COPPER COATINGS

## محل انتشار:

سومین کنفرانس بین المللی مواد فوق ریزدانه و نانوساختار (سال: 1390)

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## خلاصه مقاله:

Infection of medical devices and treatment rooms can cause significant morbidity and mortality. Having antibacterial surfaces such as silver and copper coated areas reduced the risk of bacteria growth considerably. In the current study, wire arc spraying technique has been utilized to produce a close to nanostructure antibacterial copper coating on stainless steel substrate. The chemical composition, microstructure, surface morphology of copper coatings were characterized with X-ray diffraction (XRD) and scanning electron microscope. Furthermore, determination of thickness and adhesion of the coating were investigated experimentally. The antibacterial property of copper coatings was analyzed by both gram negative Escherichia coli NCTC 10418 and gram positive Staphylococcus aureus NCTC 11047. The antibacterial performance of coatings was compared to stainless steel 316 and a micro grain structure of the commercially available copper. Results indicated that as-sprayed copper coatings have an excellent antibacterial behavior compared to stainless steel and micro grain copper which can be contributed to fine grain size and existing of defects and micro pores in the microstructure.

## کلمات کلیدی:

Copper, Nanostructure, Antimicrobial, As-Sprayed coating

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