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COATING MEDICAL DEVICES WITH ANTI-BACTERIAL NANOPARTICLES

Aharon Gedanken

Bar-Ilan University, Israel

Sonochemistry is our deposition method for imparting unique properties to the desired substrates. It was applied first to coat a large variety of textiles (cotton, polyester, nylon wool and more) with anti-bacterial Nanoparticles (NPs). Excellent adherence to the textiles was demonstrated in withstanding 65 washing cycles in Hospital washing machines. In the current presentation its power will be demonstrated in the deposition of antimicrobial NPs on medical devices such as catheters, contact lenses, cochlear electrodes, and silicon-implants. It was also deposited on artificial teeth by the sonic irradiation and avoided the formation of biofilm of *s. mutans*. The NPs that have been used in this research are ZnO, CuO, $\text{Cu}_{0.89}\text{Zn}_{0.11}\text{O}$ and MgF_2 . For the catheters too, *in vivo* experiments were conducted. The first experiment conducted in Israel where 5 coated and 5 uncoated silicon catheters were installed in rabbits (*Figure 1*) that were hanged during the 7 days of the experiment. The second was done in Synovo, Tübingen where 15 coated and 15 uncoated catheters were inserted in the rabbits which were free to run around. In both cases the coated catheters have avoided the formation of biofilm on the catheters in comparison with the appearance of urine contamination after day 4. Good results were obtained in all the above mentioned medical devices.

gedanken@mail.biu.ac.il