

## New perspectives for bactericidal medical devices and industrial application

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Hospital-acquired infections result in patients suffer and mortality and impose a substantial burden on the medical system. This increase in nosocomial infections is tightly linked to the increase observed in antimicrobial resistance which has become a health threat in recent years. One promising approach is based on nanotechnology; apparently the organization of atoms at the nanometer scale can enhance the antimicrobial activity of known antimicrobial agents or even provide new antimicrobial activity to a regular materials. Probably the most studied antibacterial is AgNp. However, lately regulatory agencies have been expressing less enthusiasm towards AgNp due to its cytotoxicity, forcing to focus the efforts toward more biocompatible materials. Another factor to be considered is the ability to produce those material in large scale enough to support their industrial application at low cost and in high quality standards. The present work describes an innovative material comprising on a mixture of metal oxides nanocomposite semiconductor with high porosity and core shell structure which confer remarkable properties as antibacterial agent. Some of its characteristics are n-type/p-type heterojunctions, arrow band gap, slow dissolution and huge surface area improving ROS release, bacterial-particle interactions and therefore high bacterial toxicity and high biocompatibility. In addition, its manufacture process allows to produce it in scale around 100 Kg/day at marginal cost and high quality. Both physicochemical properties and its synthesis method make it possible to apply it in many kind of medical devices and industrial areas already on the way to market, such as wound dressing, antibacterial barrier, pharmaceutical formulations, non-woven fabrics, paints, etc.

### Biography

Ariel Franco has worked as a Pharmacist and pursued his PhD in Chemistry at University of Chile. Currently, he is working as CTO and R&D Manager at Nanosono in Israel.