

International Advanced Research Centre for Powder Metallurgy & New Materials (ARCI)

Balapur P.O., Hyderabad – 500005, Telangana, India



Anti-microbial, Easy to clean Coatings on Glass, Metals, Plastics and Fibres

Overview

Contamination of walls, floors and surfaces of many articles that we use in day-to-day life is the main reason for disease to spread rapidly. Hence, ensuring that these surfaces are free of microbial contamination, especially in hospitals, is an important factor in maintaining the general health of people. Silver in the form of metallic silver or silver salts is known to be toxic to micro-organism, particularly bacteria while being relatively harmless to a man. When nano scaled silver is introduced to a hybrid sol-gel matrix, it results in an antimicrobial coating due to the silver nanoparticles and scratch resistant due to the inorganic network of sol-gel coatings providing high degree of abrasion resistance too. This helps in retarding the growth of microbes and thus minimizes the use of autoclaving process or cleaning using harsh chemicals. Other functionalities such as easy-to-clean property can also be incorporated into the coatings.

Key Features

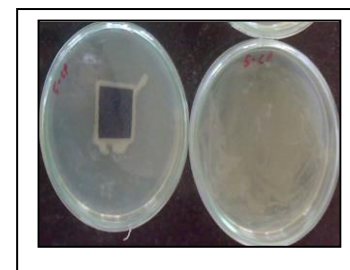
- Incorporation of anti-microbial nanoparticles, controlled release mechanism
- Easy-to-clean coatings have surface properties comparable to perfluorinated polymers (hydrophobic surface)
- Non-toxic
- Easy to scale up for large area coatings



Anti-microbial coating applied on carpet

Potential Applications

- Medicine bottles/containers
- Hospital wall panels, hospital furniture
- Hearing aids
- Food packaging
- Textile walls and textile roofs, sun shades, blinds
- As top coats on wall paints
- Anti-fouling coatings on marine floating objects



No growth of ecoli on & underneath the fabric and indefinite growth in broth

Intellectual Property Development Indices (IPDI)

- Performance and stability validated at laboratory scale

Status	1	2	3	4	5	6	7	8	9	10
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Major Patents / Publications

1. R. Subasri, H. Hima, Investigations on the use of nanoclay for generation of superhydrophobic coatings, Surface & Coatings Technology, 264 (2015) 121– 126.
2. K. Jeevajothe, R. Subasri, K.R.C. Soma Raju (2013): Transparent, Non-fluorinated, Hydrophobic Silica Coatings with Improved Mechanical Properties, Ceramics International, 39, 2111-2116.
3. R. Dineshram, R. Subasri, K.R.C. Somaraju, K. Jayaraj, L. Vedaprakash, Krupa Ratnam, S.V. Joshi, R. Venkatesan, Biofouling studies on nanoparticle-based metal oxide coatings on glass coupons exposed to marine environment, Colloids and Surfaces B: Biointerfaces 74 (2009) 75–83

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