



PROJECT 2: Towards Anti-Bacterial Surfaces

Implications of Bacterial Infections

Prevalence of bacterial infections:

- **In developing countries:** Water and food-borne infections remain a common cause of diseases and casualties.
- **In developed countries:** 76 million people suffer from food-borne infections; approximately 2 million health-care associated bacterial infections each year in the US. (Source: www.cdc.gov)
- Commonly found infectious bacteria such as *Staphylococcus aureus*, *Escherichia coli*, *Salmonella sp* are found in food, consumer and health-care products.

Current Anti-Bacterial Technologies

Incorporating bactericidal agents: chemicals and nanoparticles

- Primary function is to kill and/or inhibit the growth of bacteria.
- Bacteria can survive and develop resistance to bactericidal agents.
- Controversial due to toxicity issues with the use of silver nanoparticles.

Alternative Technology

The use of surface topography to influence bacterial attachment

- Surface topography offers a chemical-free method with less regulatory approval.
- NO design rule available – contradictory reports on effective anti-bacterial surface topography.

Project Statement: Towards Anti-Bacterial Surfaces

Objective (phase 1)

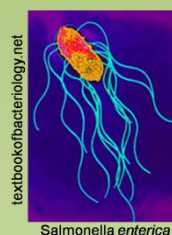
- To create a database of surfaces that affect bacterial attachment through systematic studies.

Objective (phase 2)

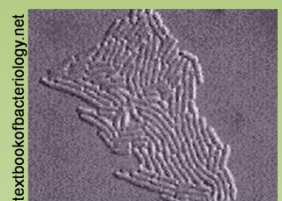
- To demonstrate anti-bacterial surfaces.

Scope: (To be defined with industry/core members)

- Type of structures (Topographies).
- Materials of interests.
- Roll to roll process etc.



Salmonella enterica



Escherichia coli

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