

Research on Bio-Nondestructive Testing



R&D



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Bacterial cells preferentially adhere to surface irregularities, such as roughness, cracks, voids, cleavages and low-pressure points.

2014

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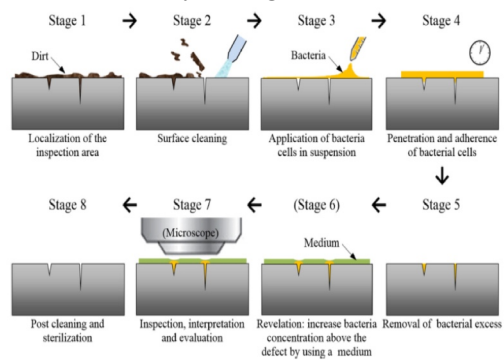
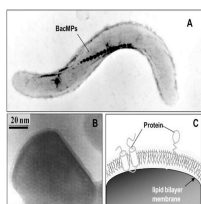
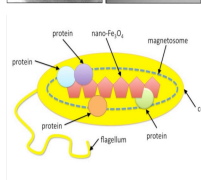


Fig. 1. Schematic representation of different stages to detect micro surface defects with bacterial cells.

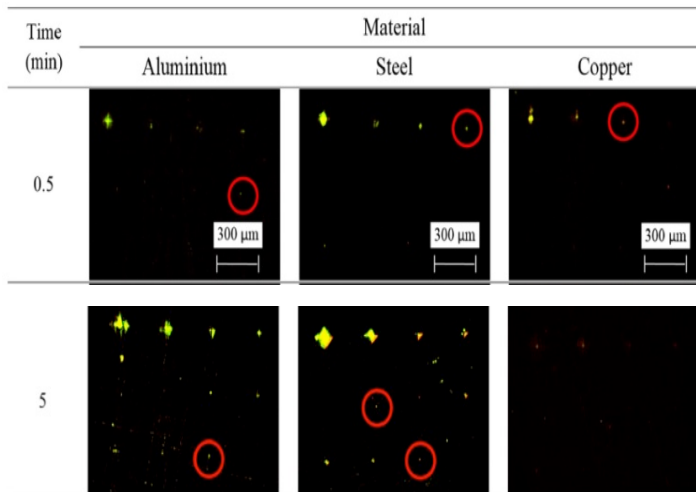
Nano Magnetic Particles based on Magneto-tactic bacteria and Eddy Current Arrays



- Nano-scaled, single crystals of iron magnetite encapsulated in a magnetosome membrane.



- Used experimentally to detect cracks and flaws in materials.



4 Minutes: Microscope
4.3 µm depth in Al,
2.9 µm in steel
6.8 µm in Cu (3min)
17 Hours: Naked eye
24 Hours: Biocorrosion

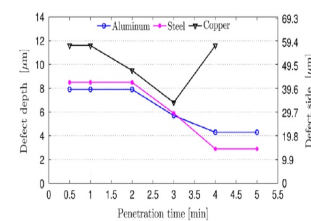
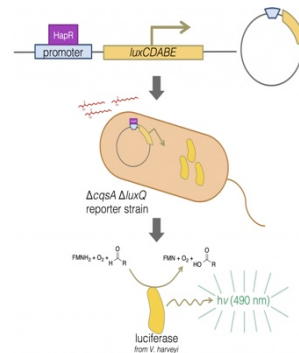
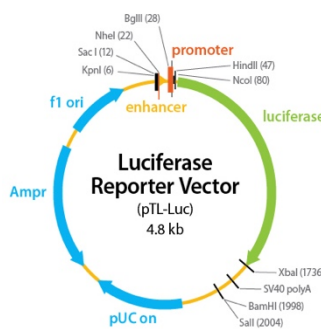


Fig. 7. Variation of detection limit with penetration time for tested materials.

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Development of New Micro Surface Penetrant NDT using Bacteria