

Antimicrobial carbon dots

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Technology

Prof. Raz Jelinek current invention is an easy, straightforward, environmentally friendly methodology to synthesis 3.5-5 nm antimicrobial carbon dots (C-dots) that are biocompatible and selective towards *Pseudomonas aeruginosa*. The C-dots present at least one aminoguanidine functional group on their outer surface, which contributes to the antimicrobial activity. The exact mass ration between the reagents forming the aminoguanidine C-dots and the zeta potential of the C-dots have a crucial effect on the antimicrobial properties of the C-dots as well. In general, the available employed synthetic pathways of C dots are focusing on conjugation C dots with anti-bacterial agents. These multi step procedure have certain limitations, which lead to insufficient selectivity and low yield. The current procedure developed here is easy and straightforward with not need to further be functionalized the surface of the C-dots. The synthesise procedure here is environmentally friendly hydrothermal reaction. The C-dots here are selective towards the desired bacterial cells, in opposed to the available methods exist today and few of them shown to be toxic.

Application

- Coating of medical devices and surfaces in hospitals, such as surgical beds, counters and etc.
- Selective labeling for diagnostic purposes
- Water purification
- Food industry

Advantages

- Selective towards *Pseudomonas aeruginosa*
- Biocompatible
- Straightforward, easy and environmentally friendly hydrothermal synthesis reaction
- No need to further functionalize the surface of the C-dots during the synthesis
- Nanometric size
- Fluorescent agent - maximal emission at 480 nm upon excitation at 390 nm

Patent

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