Size selective synthesis of Aluminum oxide nanoparticles and their anti-bacterial activities

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Abstract

Metal oxide nanoparticles (NPs) are known to possess strong antimicrobial properties. Aluminum oxide NPs have wide rang application in industrial as well as personal care product. In our work tetraoctylammonium bromide (TOAB) stabilized and TOAB non-stabilized Aluminum oxide NPs in size range from 2 to 5 nm were selectively prepared by salt reduction method, the advantages of this approach is that it's cheap and simple preparation technique. Moreover, the size can be controlled easily by changing temperature, pH, concentration of the starting material and the use of the stabilizer TOAB. The sizes of the prepared was determined using X-ray diffraction (XRD) and the morphology of Aluminum oxide NPs was investigated by scanning electron microscopy (SEM)
The antibacterial activities of aluminum oxide NPs is expected to be particle size dependent, and will be compared to micro-sized aluminum oxide particles. Wastewater Disinfection by Synthesized aluminum oxide NPs will be investigated.