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Synthesis of Iron Oxide Doped Zeolite: An Antimicrobial Nanomaterial for Drinking Water Purification Applications

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Abstract : Low cost filter based on iron doped zeolite (Fe-Z) and pottery clay was developed for an effective and efficient treatment of the drinking water contaminated with microbes. Fe-Z was characterized using powder XRD, SEM and EDX and shown to have average particle size of 49 nm with spongy appearance. The simulated samples of water self-contaminated with six microbes (S. typhi, B. subtilus, E. coli, S. aures, K. pneumoniae, and P. aeruginosa) after treatment with Fe-Z indicated effective removal of all the microbes in less than 30 min. Equally good results were obtained when actual drinking water samples, totally unfit for human consumption, were treated with Fe-Z.

Keywords : iron doped zeolite, biological and chemical treatment, drinking water
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