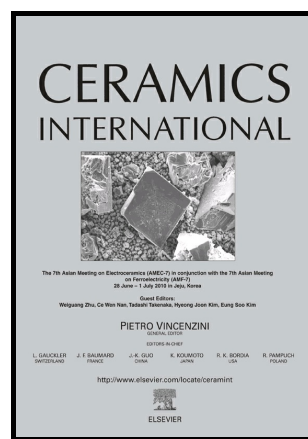


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Synthesis, characterization, and enhanced dielectric and antimicrobial properties of $W_xCu_{1-x}O$ nanostructures

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Abstract

Herein, we report the chemical synthesis of $W_xCu_{1-x}O$ nanostructures with varying concentration of dopant ($x = 0.00, 0.01, 0.03$ and 0.05). The as-obtained doped CuO nanostructures have been investigated to evaluate their physio-chemical properties like crystallinity, morphology, optical properties and infrared active modes. The dielectric study shows that doping induces a significant increase in real permittivity. In addition, the doped nanostructures also show potential towards inhibition of pathogenic microbes. The antimicrobial activity of prepared nanostructures determined against four different bacterial strains shows that W doped CuO nanostructures possess a strong antimicrobial activity against *S. aureus*, and *K. pneumoniae* and an intermediate activity against *E. coli* and *C. albicans*. These finding recognize the use of W doped CuO nanostructures in permittivity materials and bacterial disinfection nanomaterials.

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