

Title: Controlling drug resistant bacteria using chemically synthesized graphene/ceramics nanocomposites

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Abstract (250-300 words)

Antibiotic resistant bacteria are a serious threat to health not only in developing countries but also in developed countries. This is since bacteria gain resistance against traditional drugs over the time. A solution to completely eradicate different bacteria is presented in this work. Some novel nanocomposites that are comprised of graphene/X where X shows different ceramics i.e., MgO, SiO_2, Fe_3O_4 and NiO are tested for their performance against different bacterial strains. All these nanocomposites were prepared by chemical methods. A comparative study of these nanocomposites is presented in this work to inhibit the growth of Gram negative and Gram-positive bacteria. By variation of amount of graphene in different nanocomposites a systematic study is presented. It has been found that the growth of all the three bacterial strains under consideration, i.e., *E. coli, S. aureus, and P. aeruginosa* was completely inhibited by graphene/NiO nanocomposites. Graphene/Fe_3O_4 also showed good antibacterial activity. However, graphene/MgO and graphene/SiO_2 showed only a moderate activity. In the light of findings, graphene/NiO nanocomposites can be considered as an innovative material that provide an alternative for the eradicating drug resistant bacteria.

Biography (100-150 words)

Aqsa Arshad is a PhD student and working as lecturer at International Islamic University, Islamabad, Pakistan. Her PhD is at the final stage. She has also worked as visiting researcher at Rutherford Appleton Laboratory, Didcot. She has 11 publications that have been cited 86 times, and her publication H-index is 5 and has been serving as reviewer in IOP journals of international repute. Her field of interest is catalysis. She has been working on wastewater treatment using photocatalysis. She has also worked on chemical synthesis of graphene based nanocomposites that could be used as replacement drugs of traditional antibiotics.

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