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Synthesis of ZrS_2/ZnS nano photocatalyst and palladium-graphite modified electrode and its application in antibacterial, antimitotic and electrochemical degradation for waste water

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Nanocomposites of ZrS_2/ZnS were prepared by simple electrochemical method. Pd/graphite modified electrode has been synthesized by electrodeposition of Pd on graphite. The structural, composition and optical property of these materials were characterized by XRD, SEM(EDAX), UV-Vis and IR techniques. The energy gap and size of the nanoparticles were calculated. Photocatalytic degradation for Indigo Carmine dye and industrial effluents by nanoparticles were studied. Electrochemical degradation for Acridine orange dye was studied by Pd/graphite modified electrode. The kinetics of photodegradation and electrochemical degradation was studied. ZrS_2/ZnS showed very good antibacterial and antimitotic activity. These results indicate that the synthesized nanocomposites and modified electrodes would be promising materials for photocatalytic, electrochemical and biological applications.

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