

Enhanced biocatalytic activity of alkaline phosphatase immobilized on gold nanoparticles capped silica nanosphere

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Gold nanoparticles are known to bind enzymes, but reuse characteristics of the gold nano-enzyme bioconjugates has hitherto been poor. In the present study was synthesis of amine functionalized silica nanoparticles by O/W microemulsion method and it was coupled with 18 nm synthesized gold nanoparticles. After that the prepared gold nanoparticles capped silica were conjugated with enzyme alkaline phosphatase. A highlight of the new biocatalyst wherein the enzyme is supported by a more massive biocompatible surface is the ease with which separation from the reaction medium may be achieved by simple sedimentation. The prepared enzyme immobilized Au capped silica nanoparticles and free enzymes biocatalytic activity were analyzed at different pH and temperature and storage ability and reusability were also analyzed in order to investigate the efficiency of nano biocatalyst.