

Encapsulated Bacteria In Polymer Composites For Bioremediation Applications

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Abstract : Encapsulation of *Micrococcus Luteus* (M. Luteus) in polymeric composites has been employed for the bioremediation, sequestration of metals and for the biodegradation of chemical pollutants and toxic components in waste water. Polymer composites in the form of nonwovens of nanofibers, or core/shell particles can provide a bacterial friendly environment for transfer of nutrients and metabolisms, with the least leakage of bacteria. M. Luteus is encapsulated in a hydrophilic core of poly (vinyl alcohol), following by synthesis or coating of a proper shell as a support to maintain the chemical and mechanical strength. The biological activity of bacteria is confirmed by Live/Dead analysis and agar plate tests. SEM and TEM analysis were utilized for morphological studies of polymer composites. As a result of the successful encapsulation of the alive bacteria in polymers, longer storage time in their functional state were achieved.

Keywords : Polymer composites, Bacteria encapsulation, Bioremediation, Waste water treatment

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