

Formaldehyde Degradation from Indoor Air by Encapsulated Microbial Cells

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Abstract : Formaldehyde is one of the most representative volatile organic compounds present in the indoor air of residential units and workplaces. Increased attention has been given to this toxic compound because of its carcinogenic effect in health. Biological or enzymatic transformation is being explored to degrade this pollutant. *Pseudomonas putida* is a bacteria able to synthesize formaldehyde dehydrogenase, an enzyme known to use formaldehyde as a substrate and transform it into less toxic compounds. The immobilization of bacterial cells in the surface of different supports through spraying or dip-coating is herein proposed. The determination of the enzymatic activity on the coated surfaces was performed as well as the study of its effect on formaldehyde degradation in an isolated chamber. Results show that the incorporation of microbial cells able to synthesize depolluting enzymes can be an innovative, low-cost, effective and environmentally friendly solution for indoor air depollution.

Keywords : cells encapsulation, formaldehyde, formaldehyde dehydrogenase, indoor air depollution

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