



Synthesis of novel polypropylene-acrylate fiber sorbent and evaluation of the sorption properties for organic contaminants from water surface

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Received 21 December 2011; Accepted 12 February 2012

ABSTRACT

Treatment of organic matter spill remains a global concern due to its significant environmental impact. In this paper, a novel polypropylene-acrylate sorbent (PP-g-EA) has been prepared by grafting of ethylhexyl acrylate (EA) on the polypropylene (PP) fiber substrate using ultraviolet radiation method. The grafting degree could be controlled by adjusting the monomer concentration, photosensitizer (benzophenone [BP]) concentration, and the content of water in the solvent. This paper focused on the influencing factors on the sorption capacity of PP-g-EA for 1,4-xylene from water surface. The results showed that sorption capacity is mostly affected by sorption time, grafting degree of PP-g-EA, temperature, and pH. It could be concluded that the PP-g-EA fully took the advantages of both PP fibers and acrylate resins to overcome the shortcomings of each when used alone, such as fast saturation-sorption rate and high sorption capacity for organic contaminants.

Keywords: Polypropylene fiber; Grafting degree; Ethylhexyl acrylate; 1,4-Xylene; Sorption capacity

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