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Short communication

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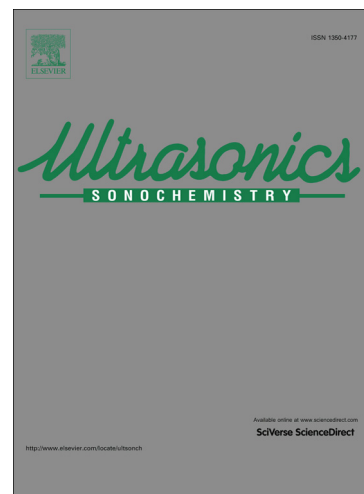
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Development of Photocatalyst Coated Fluoropolymer based Microreactor using Ultrasound for Water Remediation

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Abstract

Formation of thin layers of photocatalyst in photo-microreactor is a challenging work considering the properties of both catalyst and the microchannel material. The deposition of semiconductor materials on fluoropolymer based microcapillary requires the use of economical methods which are also less energy dependent. The current work introduces a new method for depositing nanoparticles of TiO₂ on the inner walls of a hexafluoropropylene tetrafluoroethylene microtube under mild conditions using ultrasound technique. During the ultrasonication process, changes in the polymer surface were observed and characterized using Attenuated Total Reflectance spectroscopy, Scanning Electron Microscopy and Confocal Microscopy. The rough patches form sites for catalyst deposition resulting in the formation of thin layer of TiO₂ nanoparticles in the inner walls of the microtube. The photocatalytic activity of the TiO₂ coated fluoropolymer based microcapillary was evaluated for removal of phenol present in water.

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