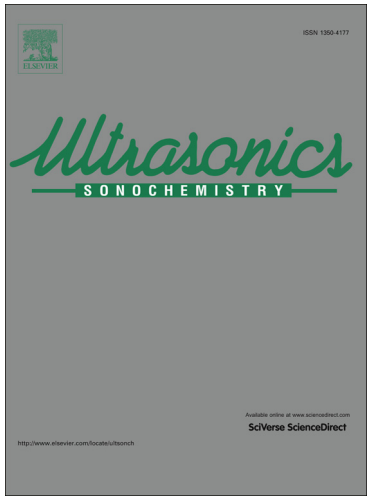

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Imparting Superhydrophobic and Biocidal Functionalities to a Polymeric Substrate by the Sonochemical Method

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ABSTRACT:

Multifunctional substrates with superhydrophobic and biocidal properties are gaining interest for a wide range of applications; however, the production of such surfaces remains challenging. Here, the sonochemical method is utilized to impart superhydrophobicity and antimicrobial properties to a polyethylene (PE) sheet. This is achieved by sonochemically depositing nanoparticles (NPs) of a hydrophobic fluoro-polymer (FP) on the PE sheets. The polymer is a flexible, transparent fluoroplastic composed of tetrafluoroethylene, hexafluoropropylene and vinylidene fluoride in the form of a powder. The NPs of polymers are generated and deposited on the surface of the PE using ultrasound irradiation. Optimizing the process results in a