Short Communication

Preparation of Electrostatic Spinning Composite Film Loaded with Polyvinylpyrrolidone for the Detection of Free Radicals in Polluted Air

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An electrospinning system was used to elongate the prepared radical-scavenging antioxidant compounds into a fibrous-structured nanomaterial under the action of electrostatic force, and its structure was characterized by scanning electron microscopy. The trapping performance of the electrospun membrane was evaluated by comparing the sampling results of two membranes, and the integral peak areas were used for the detection of free radicals also obtained. The experimental results show that the electrospun membrane can effectively trap free radicals in polluted air, and the changes in the integral peak areas of free radicals are related to volatile organic compounds, particulate matters, sulphur dioxide, nitrogen dioxide, carbon monoxide, ozone, sampling time, temperature, and humidity. Subsequently, the nanomaterial was used for outfield sampling, and the sampling performance was measured using a fluorescence spectrophotometer.

Keywords: Air pollutants, Active molecules, Detection of free radicals, Electrospun membrane, Fluorescence spectrophotometer

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