Ultrasonic Spray Nozzle System with Pb-free Piezoelectric Devices for Chemicals Dispersion

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Abstract

A new type of ultrasonic spray nozzle was fabricated employing a Pb-free piezoelectric device. The spray nozzle was designed to disperse chemicals in a water treatment mixing tank. The Pb-free piezoelectric properties in ultrasonic spray nozzles were optimized to improve the dispersion of chemicals. The Pb-free piezoelectrics were packaged in an aluminum case with silicone resin for the aqueous solution proof packaging. Chemicals were dispersed with high efficiency and the chemicals consumption was reduced by the ultrasonic fine particle spraying. The concentration of Escherichia coli in mixing tank was decreased remarkably using ultrasonic spray nozzle dispersion compared to the conventional methods.