Unlocking sustainable water treatment: The potential of piezoelectric-activated persulfate

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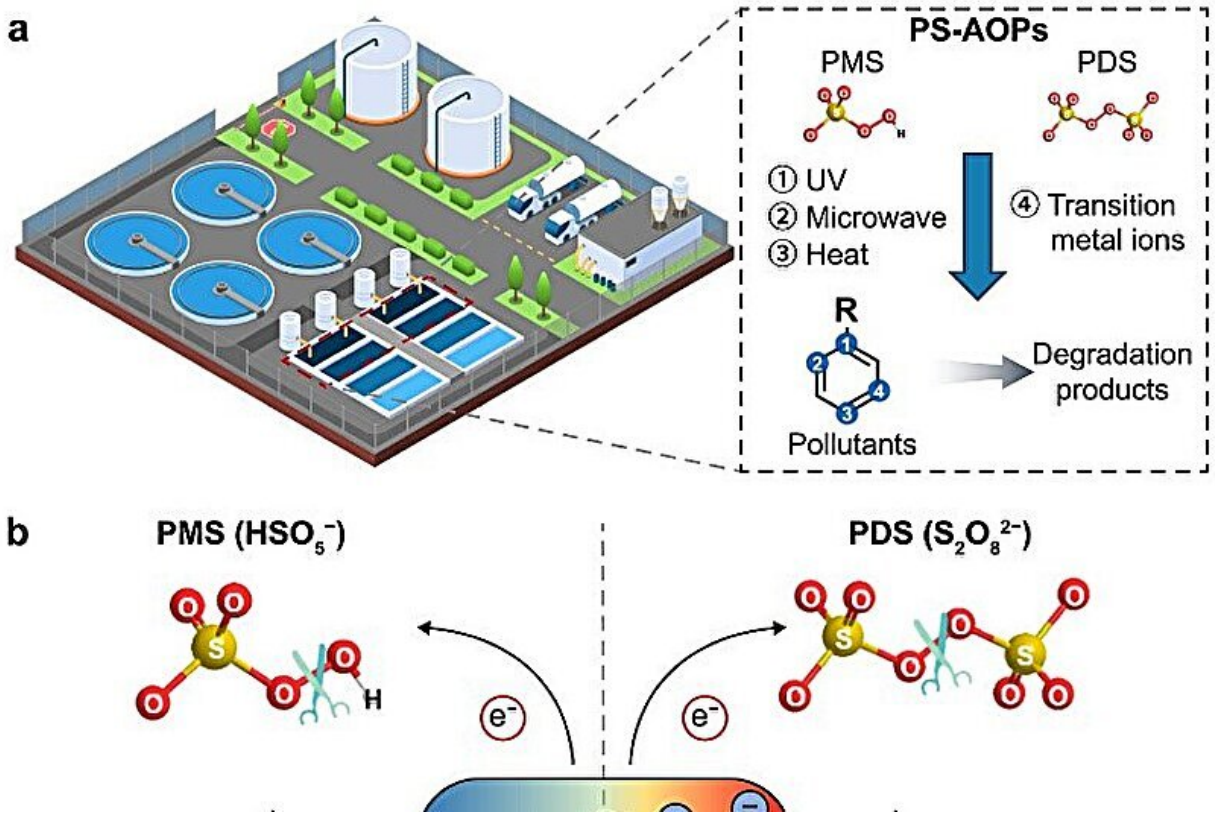

(a) Traditional activation method of PS-AOPs technology. (b) Mechanism of piezoelectric/PS-AOPs. (c) Annual number of publications concerning piezoelectric/PS-AOPs. Credit: *Environmental Science and Ecotechnology* (2023). DOI: 10.1016/j.ese.2023.100329

In a recent study published in the journal *Environmental Science and*

Ecotechnology, scientists from Jinan University discuss a new, eco-friendly way to clean water. They've discovered a method called "piezoelectric activation of PS."

This technique uses special materials that create piezoelectricity when they are squeezed or pressed, thereby cleaning the water. What's interesting is that this squeezing can come from natural things like wind, ocean waves, or river currents. So, it doesn't need extra energy, making it a very green and efficient way to make water safe.

The research on piezoelectric/PS-AOPs is about finding new ways to clean water using a special process. This process uses materials that can generate piezoelectricity when they are pressed or squeezed. This piezoelectricity is then used to activate a chemical called persulfate, which helps break down harmful substances in the water.

Scientists are working with different materials like $BaTiO_3$, ZnO, and MoS_2 to make this process better. They face challenges such as not getting enough energy from the materials and slow movement of electrons, but they're improving the materials to solve these problems. They're also exploring using natural forces like wind and water flow to power this process, which is a sustainable and eco-friendly approach.

This new technology could do more than just clean water; it could also turn the bad substances in the water into useful things. This makes it a really promising way to clean water in environmental remediation. As research continues, this method could become a major way to treat water and control pollution, using renewable energy and being kind to the environment.

Dr. Mingshan Zhu, a leading researcher in the field, emphasized the significance of this development. "Piezoelectric activation of persulfate represents a paradigm shift in water treatment technology. It not only

addresses the efficiency and environmental concerns associated with traditional methods but also opens up new pathways for using renewable energy sources."

This exciting method is transforming the way we purify water. It's environmentally friendly, energy-efficient, and highly effective at combating water pollution. Representing a significant leap towards a cleaner and healthier planet, this technique doesn't just enhance water cleanliness; it plays a substantial role in environmental protection. It's a comprehensive approach to making our world a better place.

More information: Zhi Li et al, Piezoelectricity activates persulfate for water treatment: A perspective, *Environmental Science and Ecotechnology* (2023). DOI: 10.1016/j.ese.2023.100329

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