

## STUDY OF PHOTOCATALYTIC DEGRADATION OF ORGANIC POLLUTANTS IN THE PRESENCE OF ULTRASOUND

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### ABSTRACT

Organic pollutants, like CFCs, PCBs and PAHs are among the most harmful substances for the environment. Pollution-related problems have attracted much attention by the researchers. One of the main sources comes from wastewater containing dyes. Azo dyes are widely used in industry, accounting for nearly 70% of the world dye production. Every year a large percentage of those dyes escape in the environment, causing various problems regarding both human health and soil contamination. Clothing industries demand durable dyes that can withstand discoloration due to daily use. Since they are highly durable and harmful to the environment, water contaminated from organic pollutants needs to be properly processed. Currently, advanced oxidation processes are employed, by utilizing ozone, H<sub>2</sub>O<sub>2</sub>, Fenton reagent and ultraviolet (UV) light<sup>[1-3]</sup>. Another interesting approach is the use of ultrasounds, which promise high reaction rates and short treatment times<sup>[4]</sup>.

In this work six azo dyes were selected from the weaving and leather industry. Their degradation was examined via UV illumination, by using the TiO<sub>2</sub> (P-25) semiconductor as a catalyst, and via ultrasound irradiation on low (20 kHz) and high frequencies (860 kHz). The combination of those two techniques was also employed in order to study their synergy.

### REFERENCES

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