

## Atmospheric pressure DBD plasma source with flowing liquid films for degradation of antifungal drug traces from water

The widespread use of antifungal drugs, such as Nystatin, has contributed to the emergence of resistant *Candida* strains, posing a significant challenge to public health. The presence of antifungal residues in wastewater further exacerbates this issue, necessitating effective removal strategies. The atmospheric pressure plasma generates reactive oxygen and nitrogen species, which might interact with the antifungal compounds, leading to degradation and removal from aqueous solutions.

In this study we discuss the technical concept and preliminary results on an atmospheric pressure DBD plasma source with flowing liquid film, as a solution for degradation of antifungal drug traces from water. The dielectric barrier discharge (DBD) plasma source is diagnosed using electrical and optical methods.

To evaluate the efficacy of Nystatin degradation in aqueous solutions of this method, UV-VIS spectroscopy was employed to monitor changes in Nystatin concentration before and after plasma exposure. The results demonstrated a significant reduction in the absorption spectra of Nystatin after treatment. These findings suggest that atmospheric pressure DBD plasma technology is a viable approach for the removal of antifungal drug residues from wastewater. This method could complement existing water treatment techniques, offering an environmentally friendly and efficient solution to mitigate the risks associated with pharmaceutical contamination. Future research should focus on optimizing treatment parameters, assessing potential byproducts, and evaluating the scalability of this plasma-based approach for large-scale wastewater treatment.

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