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Integrated Evaluation of POME Treatment by Dielectric Barrier Discharge based on Yield of H₂ and CH₄, EEMs and removal of COD

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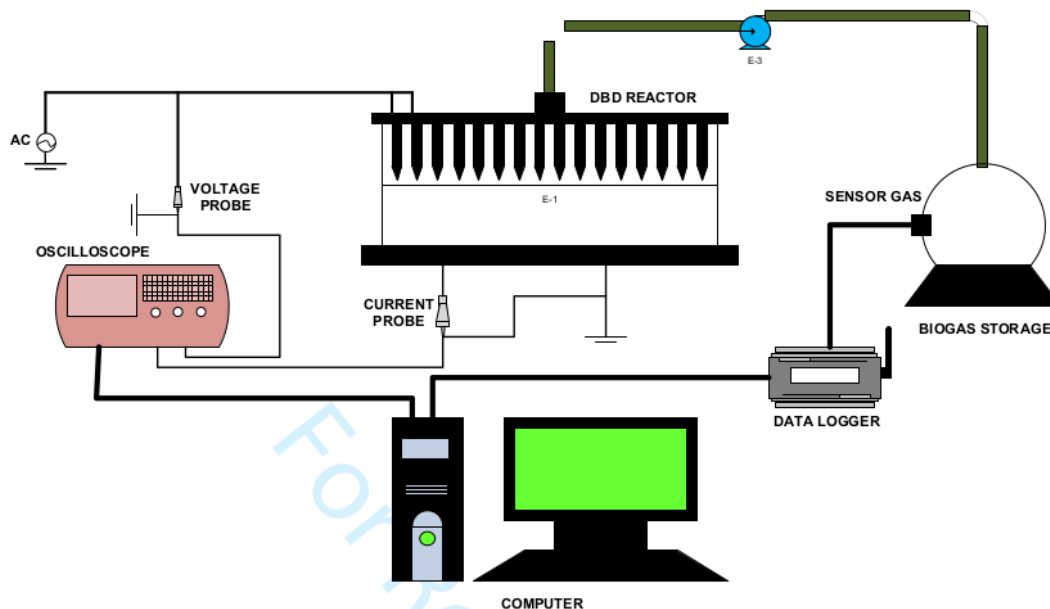


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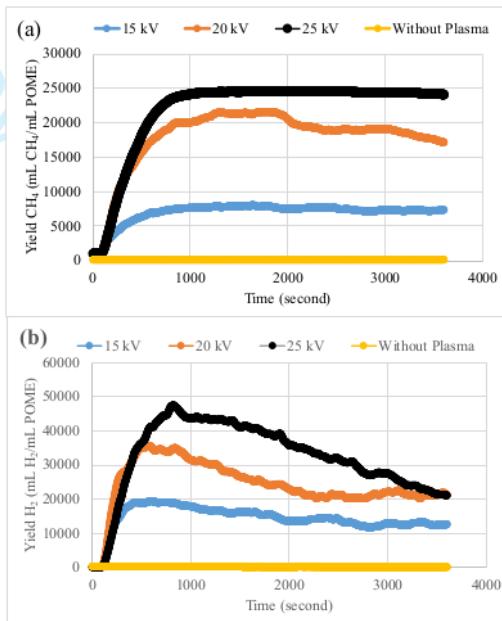


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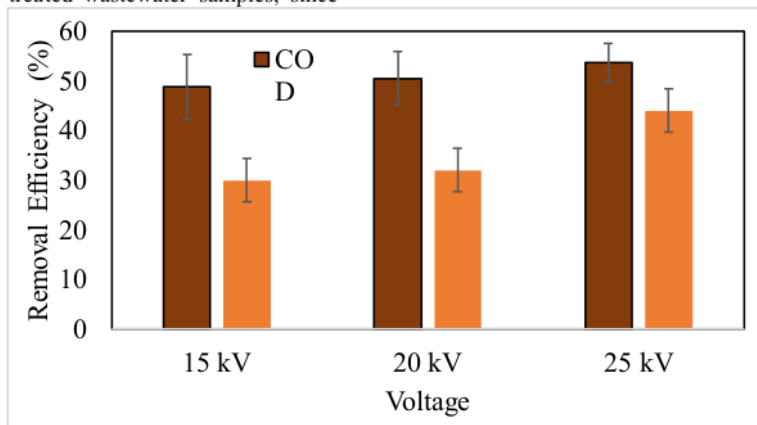


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specific excitation emission (Ex/Em) wavelengths can be correlated with certain molecular structures. Volumetric gas production was reported at standard temperature and pressure (STP). All the measurements were done in triplicate and the results were plotted and reported as the average value with standard deviation.

2. Results and Discussion

2.1 Production of Methane and Hydrogen

Due to the voltage enrichment, both the electron density and the concentration of radical species increased significantly, which stimulates and activates the production of CH_4 and H_2 . The applied voltage had a significant effect on the CH_4 and H_2 yield from the POME, as shown in Figs. 2(a) and (b). The CH_4 yield was 7697, 20050 and 24156 mL/mL POME and the H_2 yield was 7697, 20050 and 24156 mL/mL POME for applied voltage at 15, 20 and 25 kV, respectively. Radical species were generated by the C=O and C-H bonds when a high voltage was applied to the POME and reacted to form CH_4 , H_2 and CO_2 . The chain reaction led to a higher degradation of the POME when the applied voltage was increased. It is clear that, as Figs. 2 (a-b) show, the applied voltage

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Conclusions

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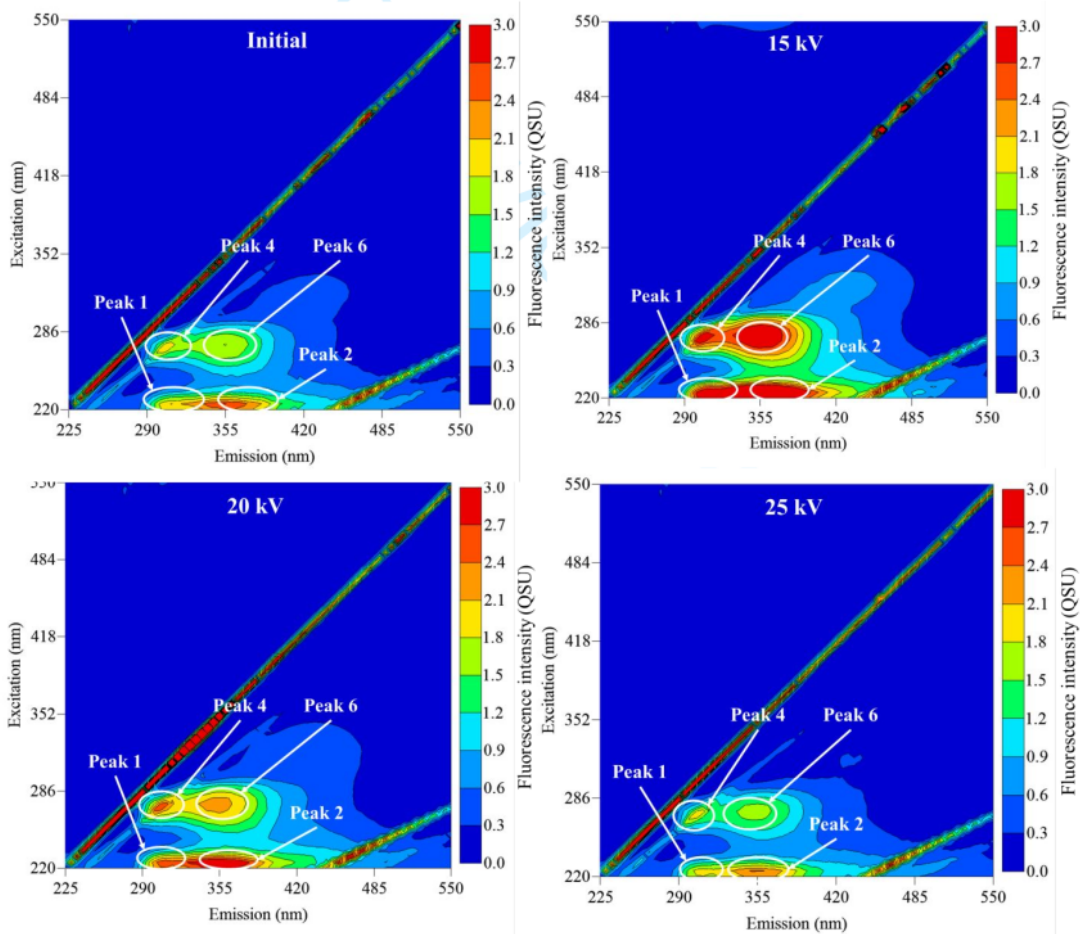


Fig. 4. The effect of applied voltage on fluorescence Normal Organic Matter

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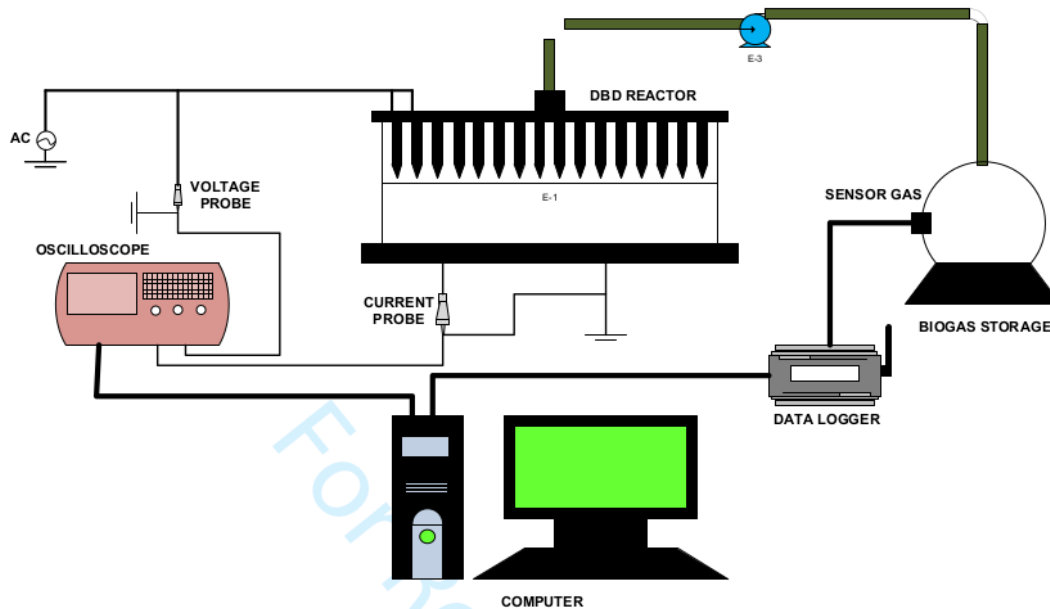


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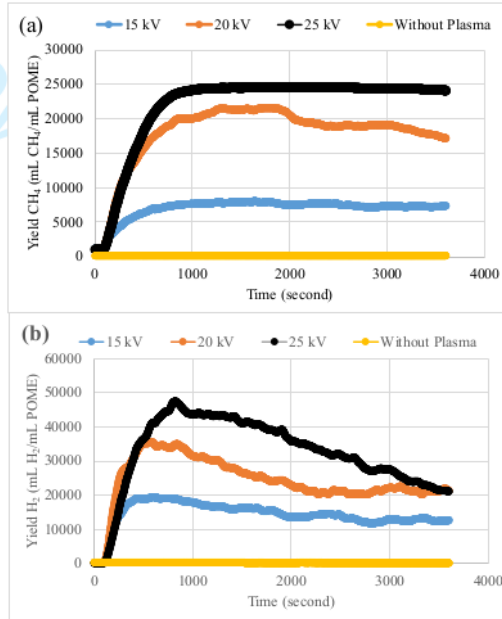


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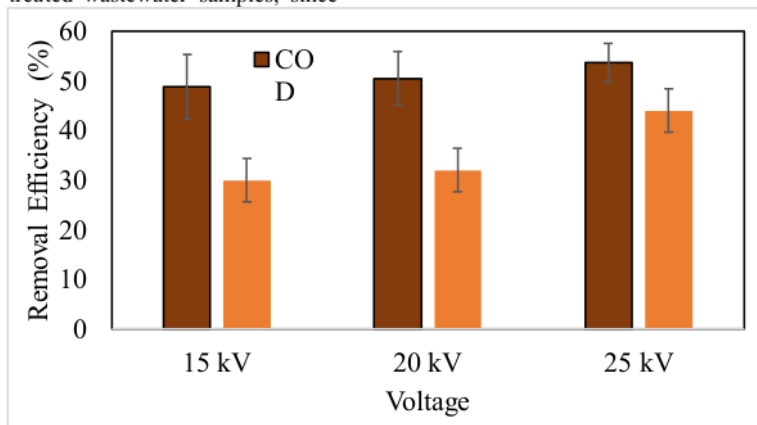


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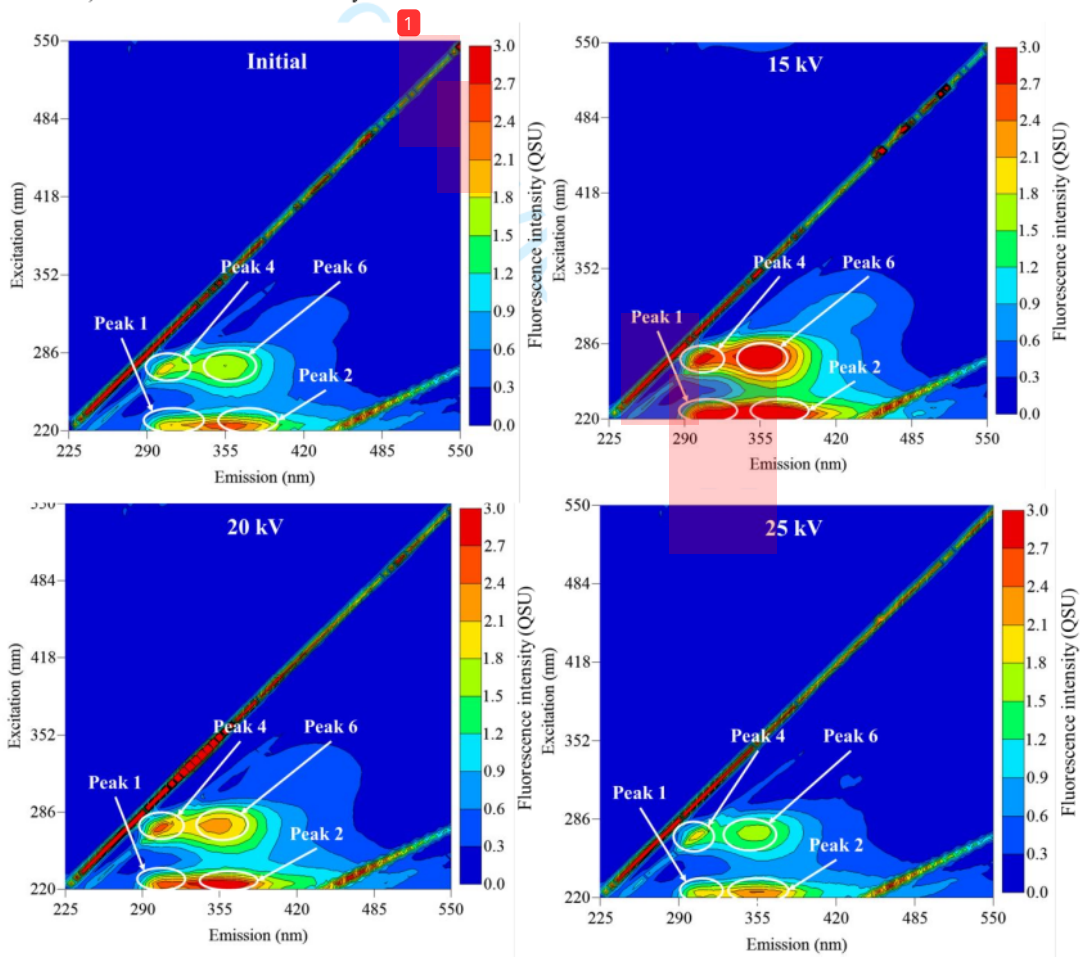


Fig. 4. The effect of applied voltage on fluorescence Normal Organic Matter

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