

## Anodic Oxidation of Basic Blue 3 Dye by Using BDD electrode

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Textile industries are one of the most polluting industries in terms of the volume and complexity of its effluents discharge. The dyeing and finishing operations in textile industries contribute a major share to wastewater generation. The most important characteristic of a textile wastewater is its color. Textile wastewaters cause coloring of the receiving water environment. Different dyes result in wastewater with different colors and these variations in color induce variation in COD of the wastewater. Textile wastewater, depending on dye used, can have a toxic effect on the living organisms in the receiving water, affects the ecosystem adversely, and reduces the assimilative capacity of the environment [1]. Therefore, textile wastewater needs to be treated to satisfy discharging standards.

In this study, electrochemical oxidation of Basic Blue 3 (BB3) was studied in a bipolar trickle tower reactor by using Raschig ring shaped boron-doped diamond electrodes in a recirculated batch mode. The effects of initial dye concentration,  $\text{Na}_2\text{SO}_4$  concentration as supporting electrolyte, current density, and flow rate were investigated, and practically, complete BB3 removal was obtained in the studies. Under best experimental conditions, 99% of color and 86.7% of COD removal were achieved respectively at the current density of  $0.875\text{mA}/\text{cm}^2$  as also shown for dye removal in Fig.1. According to the results, BDD anode was found very successful for the degradation of BB3 and removal of COD simultaneously.

**Key Words:** Anodic oxidation, Textile Dye, BDD anode

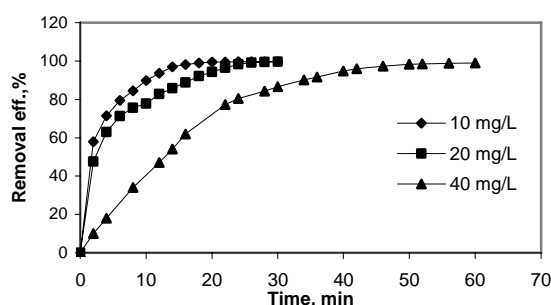


Fig.1. Variation of removal efficiency with time.

### References

- [1] Koparal, A.S., Yavuz, Y., Gürel, C., Öğütveren Ü.B., 2007. Electrochemical Degradation and Toxicity Reduction of C.I. Basic Red 29 Solution and Textile Wastewater by Using Diamond Anode, J. Hazard. Mater. B145, 100-108.