

## Electrochemical oxidation of phenanthrene in surfactant solution using boron-doped diamond (BDD) electrode

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The electrochemical oxidation of phenanthrene in a surfactant solution was studied in batch electrolysis tests using BDD (boron-doped diamond) electrode as anode. A nonionic surfactant, Triton X-100 was used at different concentrations, 1 and 5 g/L, and 18 and 89 mg/L of phenanthrene were dissolved in the solutions, respectively. When the COD of the solution was relatively high, the concentrations of phenanthrene and Triton X-100 decreased linearly with charge loading. In this range, instantaneous current efficiency remained about 100% and phenanthrene and the surfactant were degraded simultaneously at the same rate. However, as the COD was lowered to a certain level, the concentrations were reduced exponentially and the degradation of phenanthrene was faster than that of the surfactant. Anodic oxidation using BDD electrode can be an effective technology to destruct both phenanthrene and surfactant in an aqueous solution.