

DEGRADATION OF PHENOLIC COMPOUNDS IN WATER BY NON-THERMAL PLASMA TREATMENT

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A stainless-steel hollow needle type anode was used in the reactor to treat industrial wastewater by gas-liquid phase non-thermal plasma by corona discharge. The results showed that the short electrode gap, 1 cm, has a higher plasma energy density which improves the removal of the phenolic derivatives, reaching 100% after about 60 min. The H₂O₂ concentration was higher in the discharge system when the content of oxygen was increased. The efficiency of the phenol removal by chemical oxygen demand was only 10 – 31% after 60 minutes. The identified intermediates were catechol, hydroquinone, 1,4-benzoquinone, 2-nitrophenol, 1,2-benzenedicarboxylic acid, diphenylmethanone, 2-methyl-hydroquinone, 2-methyl-1,4-benzoquinone, and trace amounts of organic.

Keywords: corona discharge, intermediates, non-thermal plasma, phenolic.

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INTRODUCTION

Recently, several advanced oxidation processes (AOPs) have been studied to remove organic compounds from wastewater. Most AOP,