

**SYNTHESIS OF BORON NITRIDE DOPED POLYPYRROLE  
HYBRID NANOCOMPOSITES FOR PHOTOCATALYTIC  
DEGRADATION OF 2-CHLOROPHENOL FROM  
AQUEOUS SOLUTION**

**FAIZAH BINTI MOHAMMAD YUNUS**

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This Final Year Project Reported entitled “**Synthesis of Boron Nitride Doped Polypyrrole Hybrid Nanocomposites for Photocatalytic Degradation of 2-Chlorophenol from Aqueous Solution** ” was submitted by Faizah Binti Mohammad Yunus, in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Chemistry, in the Faculty of Applied Sciences, and was approved by

---

Dr. Siti Nor Atika Bt Baharin  
Supervisor  
B. Sc. (Hons.) Chemistry  
Faculty of Applied Sciences  
Universiti Teknologi MARA  
72000 Kuala Pilah  
Negeri Sembilan

---

Nurul Huda Abdul Halim  
Project Coordinator  
B. Sc. (Hons.) Chemistry  
Faculty of Applied Sciences  
Universiti Teknologi MARA  
72000 Kuala Pilah  
Negeri Sembilan

---

Mazni Musa  
Head of Programme  
B. Sc. (Hons.) Chemistry  
Faculty of Applied Sciences  
Universiti Teknologi MARA  
72000 Kuala Pilah  
Negeri Sembilan

Date: \_\_\_\_\_

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## ABSTRACT

### **SYNTHESIS OF BORON NITRIDE DOPED POLYPYRROLE HYBRID NANOCOMPOSITES FOR PHOTOCATALYTIC DEGRADATION OF 2-CHLOROPHENOL FROM AQUEOUS SOLUTION**

This investigation was focusing on the photocatalytic degradation of toxic compound in waste water by using nanocomposite. In this study, boron nitride was doped with conducting polypyrrole via oxidation *in-situ* polymerization method using  $\text{FeCl}_3$  as oxidation agent to form nanocomposite. The synthesized h-BN/PPy nanocomposites were comprehensively characterized using X-ray diffraction (XRD) and Fourier transform infrared spectroscopy (FTIR). The photodegradation of 2-chlorophenol was performed under direct sunlight for 3 hours and using different parameter such as different pH, contact time and initial concentration. The optimum results were achieved in concentration of 50 mg/L, at pH 6, and 3 hours of contact time. This optimized experiment condition yield a 91.07% degradation of 2-chlorophenol by BN/PPy nanocomposite. The results indicated that BN/PPy nanocomposite was the most efficient in photocatalytic activity compared to pure polypyrrole and pure boron nitride.