DEVELOPMENT OF BIOSORBENT USING CORN (*Zea mays*) COBS FOR THE RECOVERY OF GOLD FROM E-WASTE

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ACCEPTANCE SHEET

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BIOGRAPHICAL SKETCH

Irish A. Bayudan was born at Pantoc, Aliaga Nueva Ecija on November 12, 1997. She is the third daughter of Mr. Reynaldo T. Bayudan and Cynthia A. Bayudan. Her father is a farmer and her mother is a vegetable vendor.

She finished her elementary education as a valedictorian at Gaudencio Medina Pantoc Elementary School in the year of 2010 and her high school education at Aliaga National High School in the year of 2014 in which she received an academic award. Now, she is a fourth year student in Central Luzon State University taking up Bachelor of Science in Chemistry. She lives in Ladies Dorm 3 while studying in CLSU.

The seminars and program she attended during her study in CLSU was the 24th Psychology Students Research Congress and Agri-Biotech Career Orientation for Potential Researchers on Biotechnology Research and Development Programs. She was the former OJT student in Prime Water, Tarlac City Water District-Water Laboratory.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF APPENDIX FIGURES

ABSTRACT

BAYUDAN, IRISH A., Department of Chemistry, College of Arts and Sciences, Central Luzon State University, Science City of Muñoz, Nueva Ecija, Philippines, **MAY 2018, DEVELOPMENT OF BIOSORBENT USING CORN (*Zea mays)* COBS FOR THE RECOVERY OF GOLD FROM E-WASTE**

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Background: Adsorption technique to recover gold from aqueous solutions using agricultural wastes has become the most promising method due to its low cost, high efficiency and eco-friendly method. In this study, corn (*Zea mays*) cobs as an agricultural waste and eco-friendly biosorbent was efficiently applied for gold recovery from printed circuit boards (PCBs) of mobile waste. Various instrumental characterization of cross-linked polymer of corn cobs before and after adsorption of gold particles were used to confirm the successful adsorption of metals particles on biosorbent surface. **Methods:** The surface morphology and functional groups of cross-linked polymer of corn cobs before and after gold adsorption were analyzed using Scanning Electron Microscopy (SEM) and Fourier Transform Infrared Spectroscopy (FTIR) while optical microscope was used for a more detailed and larger image of gold particles adsorbed in the biosorbent. Qualitative analysis was applied to prove that the obtained metal particles was indeed gold. **Results:** Results from FTIR spectra confirmed the oxidation of hydroxyl to carbonyl group in the biosorbent and the reduction of gold ions that occur simultaneously on the surface of synthesized biosorbents. The SEM and optical microscope images further showed that the gold particles were adsorbed in the biosorbent surface while qualitative analysis confirmed that gold was present in the biosorbent giving a positive test of green color spot. **Conclusions:** The cross-linked polymer of corn cobs, therefore, has potential in gold recovery process.

Keywords: corn cobs; adsorption; cross-linked polymer; e-waste; biosorbent

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