AMINE-BASED DERIVATIVE FLUORESCENT CHEMOSENSOR FOR HEAVY METALS DETECTION

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This Final Year Project Report entitled **"Amine-based Derivative Fluorescent Chemosensor for Heavy Metals Detection"** was submitted by Nur Diyanah Zulaikha binti Mohd Zain in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Applied Chemistry, in the Faculty of Applied Sciences, and was approved by

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ABSTRACT

AMINE-BASED DERIVATIVE FLUORESCENT CHEMOSENSOR FOR HEAVY METALS DETECTION

This cricical review paper explores the use of amine-based derivative fluorescent chemosensor in heavy metal detection. Moreover, the integration of amine-based chemosensor with organic fluorophores like rhodamine, coumarin and BODIPY has improved the sensing unit in the chemosensor. The primary objectives of this review are to study the utilization of chemosensor in sensing metal ions and its classification, to determine the types of chemosensors with excellent sensitivity and selectivity for detecting heavy metals, to highlight the properties of amine-based fluorescent chemosensor and its functionalization with various functional groups, to investigate the effect of modification of amine-based fluorescent chemosensor with organic fluorophores and its synthesis routes to produce highly sensitive and selective chemosensor for metal ions, and to analyze the environmental factors towards performance of amine-based fluorescent chemosensors. The present review pulls out the works of literature to find information on challenges and opportunities of amine-based derivative fluorescent chemosensor in detecting heavy metals. The most significant finding was that although chemosensor provided the easiest and least time-consuming way of detecting heavy metals, it also raised issues concerning the less sensitive parts of the capturing unit, as well as low sensitivity in sensing the metal ion itself accurately. The implications of this review point to the need to utilize amine-based fluorescent chemosensor with organic fluorophores and ongoing research to harness the full potential of the chemosensor in sensing heavy metal selectively and sensitively.