# 6\QWKHVLV RI )H 2 NDROLQ PDJQHWLF QDQR FRPSRVLWHV DQG WKHLU HDQ

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Fe3O4/kaolin magnetic nano-composites were prepared by chemical co-precipitation method. e nano-composites were characterized using various instrumental techniques including X-ray di raction (XRD), Fourier transform infrared spectroscopy (FTIR), Scanning Electron Microscopy (Sem), Transmission Electron Microscopy Analysis (Tem), Vibrating Sample Magnetometer (VSM) and N2 adsorption -desorption method. e prepared nano-composites were tested and evaluated as an adsorbent in the removal of the anionic C.I Direct Red 23 dye. e e ect of contact time, initial dye concentration, adsorbent dose, temperature and initial pH of the solution on the adsorption process was studied. e experimental data was modeled by using di erent isotherms and the results showed that linearized Langmuir isotherm is applicable to the process demonstrating a favorable process. Kinetic models were tested and the obtained results tted best the pseudo-second orde model. e calculation of thermodynamic potential functions such as the changes in enthalpy, entropy, and Gibbs' free energy showed that the adsorption is a spontaneous process with an endothermic heat e ect and entropy production.

## Biography

A Magdy has received his Master of Science degree with honors in Chemical Engineering from Alexandria University, Egypt. He has his expertise in advanced techniques for water and wastewater treatment. His background was reinforced with his academic career in the Chemical Engineering Department at Alexandria University. In 2012, he was appointed as a Teaching Assistant at the Arab Academy for Science and Technology. His thesis focused on the discovery of new materials used for the adsorption of undesired pollutants present in wastewater. His present research is based on the utilization of cheap, readily available kaolin clay and the extraordinary characteristics of nano iron oxide particles to produce a novel composite which may be applied in the treatment of polluted wastewater that has threatening effect on human health and aquatic life.

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