

## 2.5 Instrumentation

The pH of the solution was regulated with a pH meter (Eutech, Malaysia). The crystallite size and behaviour were ascertained using the XRD technique (D-8, Bruker), and the surface morphology and elemental composition of the synthesized material were examined using SEM and EDX, respectively; JSM-6380 JEOL Electronics, Japan. The AFM (D-8, Bruker) technique was used to analyze the surface topography of synthesized materials.

## 2.6 Electrochemical analysis procedure

The CHI electrochemical analyzer (Tennison Hill Drive, Austin, USA) was employed to conduct the voltammetry analysis.

## 2.1 Chemicals and reagents

Sigma Aldrich (Louis, USA) provided a variety of materials such as Hydrochloric acid, levofloxacin (LEV;  $\geq 99\%$ ), ethanoic acid, phosphoric acid, boric acid, sodium acetate, sodium hydrogen phosphate (monobasic),  $\text{MgSO}_4$ ,  $\text{Zn}(\text{Ac})_2$ ,  $\text{K}_3\text{PO}_4$ , potassium ferrocyanide,  $\text{NaNO}_3$ , sodium hydrogen phosphate (dibasic), potassium ferricyanide,  $\text{NH}_4\text{F}$ , Ascorbic acid, Oxalic acid, Glucose, and Dopamine that are used in current research project. Ammonia ( $\text{NH}_3$ ), potassium chloride, nafion ( $\text{NR}^{50}$ ), Iron nitrate ( $\text{Fe}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$ ), calcium nitrate ( $\text{Ca}(\text{NO}_3)_2 \cdot 2\text{H}_2\text{O}$ ), citric acid ( $\text{C}_6\text{H}_6\text{O}_7 \cdot \text{H}_2\text{O}$ ), and alumina powder ( $0.3 \mu\text{m}$  and  $0.5 \mu\text{m}$ ) were obtained from Fluka (Bush, Switzerland). Additionally, the deionized water (DIW) was supplied by a water purifier (Bedford, USA).