

**LIST OF SYMBOLS AND ABBREVIATIONS**

|                                 |                                     |
|---------------------------------|-------------------------------------|
| Atm                             | - Standard atmosphere               |
| °C                              | - Temperature                       |
| $h\nu$                          | - Photon energy                     |
| Hz                              | - Hertz                             |
| kHz                             | - Kilo hertz                        |
| $\lambda$                       | - Wavelength of X-rays              |
| $\beta$                         | - Full-width at half-maximum (FWHM) |
| Au                              | - Gold                              |
| Ag                              | - Silver                            |
| AgCl                            | - Silver chloride                   |
| AgBr                            | - Silver bromide                    |
| $\text{BiVO}_4$                 | - Bismuth vanadate                  |
| $\beta\text{-SnWO}_4$           | - Tin tungsten oxide                |
| $\text{CO}_2$                   | - Carbon dioxide                    |
| CVD                             | - Chemical Vapour Deposition        |
| $\text{C}_2\text{H}_5\text{OH}$ | - Ethanol                           |
| C/O                             | - Carbon-Oxygen ration              |
| Cr                              | - Chromium                          |
| C                               | - Carbon                            |
| C-C                             | - Carbon-carbon bond                |
| C=O                             | - Carbonyl group                    |
| $C_t$                           | - Time depend concentration         |

|                  |  |
|------------------|--|
| $C_0$            | - Initial concentration                            |
| $C_e$            | - Equilibrium concentration                        |
| Cl               | - Chlorine   |
| EDAX             | - Energy dispersive spectroscopy                   |
| eV               | - Electron Volte                                   |
| E                | - Electron   |
| EDTA             | - Ethylenediaminetetraacetic acid                  |
| GO               | - Graphene oxide                                   |
| GR               | - Graphene   |
| GD               | - Graphdiyne                                       |
| G1, G2, G3&G4    | - Various oxidized graphene oxide                  |
| H                | - Hole   |
| HCl              | - Hydrochloric acid                                |
| $H_2SO_4$        | - Sulphuric acid                                   |
| $H_2O_2$         | - Hydrogen peroxide                                |
| $H_2PO_4$        | - Dihydrogen Phosphate                             |
| HR-TEM           | - High-Resolution Transmission Electron Microscopy |
| JCPDS            | - Joint Committee on Powder Diffraction Standards  |
| $KMnO_4$         | - Potassium permanganate                           |
| KIO <sub>4</sub> | - Potassium periodate                              |
| KOH              | - Potassium hydroxide                              |
| K                | - Rate constant                                    |
| MI               | - Microwave irradiation                            |

|                                 |   |
|---------------------------------|---|
| MB                              | - Methylene Blue  |
| ML                              | - Mole per liter  |
| M                               | - Mass  |
| mgL <sup>-1</sup>               | - Milligram per liter   |
| Nm                              | - Nanometer   |
| NaBH <sub>4</sub>               | - Sodium borohydride  |
| NaOH                            | - Sodium hydroxide  |
| Na <sub>2</sub> SO <sub>4</sub> | - Sodium sulfate  |
| O <sub>2</sub>                  | - Oxygen  |
| PL                              | - Photoluminescence   |
| pH                              | - Potential of hydrogen                                       |
| PMS                             | - Peroxymonosulfate   |
| PDS                             | - Peroxydisulfate   |
| q <sub>t</sub>                  | - Adsorbed per unit weight of adsorbent                       |
| q <sub>m</sub>                  | - Maximum amount of dye adsorbed by constant amount adsorbent |
| RR120                           | - Reactive red 120  |
| RhB                             | - Rhodamine B   |
| rGO                             | - Reduced graphene oxide                                      |
| Rpm                             | - Revolutions per minute                                      |
| R                               | - Universal gas constant                                      |
| R <sup>2</sup>                  | - Linear regression   |
| TiO <sub>2</sub>                | - Titanium dioxide  |
| TOC                             | - Total organic carbon  |
| T                               | - Temperature   |

|                 |                                    |
|-----------------|------------------------------------|
| T               | - Time                             |
| UV spectroscopy | - Ultraviolet–visible spectroscopy |
| V               | - Volume                           |
| V               | - Voltage                          |
| W               | - Weight                           |
| W               | - Watts                            |
| XRD             | - X-Ray diffraction pattern        |
| Z               | - Zinc                             |
| ZnO             | - Zinc Oxide                       |
| ZnS             | - Zinc Sulphide                    |