

DECLARATION

I **V. KUMARAVELAN** hereby declare that the thesis entitled **“SYNTHESIS, CHARACTERIZATION AND APPLICATIONS OF Fe₃O₄ IMMOBILIZED MAGNETIC NANO CARBON BALLS FOR THE ADSORPTION OF TEXTILE DYES UNDER BATCH AND COLUMN MODE”** submitted to the Periyar University, in partial fulfillment of the requirements for the award of the Degree of **Doctor of Philosophy in Chemistry** is a record of original and independent research work done by me during 2015-2018 under the supervision and guidance of **Dr. P. SIVAKUMAR**, Assistant Professor, Department of Chemistry at Arignar Anna Government Arts College, Namakkal - 637002, and it has not formed the basis for the award of any Degree / Diploma / Associate ship / Fellowship or other similar title to any candidate in any University.

Signature of the Candidate

(V. KUMARAVELAN)

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NOTATIONS AND ABBREVIATIONS

| | | |
|---|---|------------------------------------|
| U.S.\$ | - | U.S. dollar |
| % | - | Percentage |
| ~ | - | Approximately |
| ≥ | - | Greater than equal |
| °C | - | degree Celsius |
| APHA | - | American Public Health Association |
| BET | - | Brunauer, Emmett, Teller |
| BOD | - | Biological Oxygen Demand |
| COD | - | Chemical Oxygen Demand |
| conc | - | concentration |
| etc | - | etcetera |
| km³ | - | cubic kilometer |
| m³ | - | cubic meter |
| g | - | gram |
| g/L | - | gram per liter |
| g/mg | - | gram per milligram |
| g/ml or gml⁻¹ | - | gram per milliliter |
| ISI | - | Indian Standards Institution |
| L | - | liter |
| ln | - | Natural logarithm |
| log | - | Logarithm |
| M | - | Molar concentration |
| m²/g or m²g⁻¹ | - | meter square per gram |
| mg | - | milligram |

| | | |
|---|---|--|
| mg/g | - | milligram per gram |
| mg/g/min (or) mg g⁻¹ min⁻¹ | - | milligram per gram per minute |
| mg/kg | - | milligram per kilogram |
| mg/L | - | milligram per litre |
| min⁻¹ | - | per minute |
| mL | - | millilitre |
| nm | - | nano metre |
| pH_{pzc}/pH_{zpc} | - | points of zero charge pH/ Zero point charge pH. |
| ppm | - | parts per million |
| rpm | - | rotations per minute |
| sec⁻¹ | - | per second |
| SEM | - | Scanning electron microscope |
| TDS | - | Total Dissolved Solids |
| JCPDS | - | Joint Committee on Powder Diffraction Standards |
| vs. | - | versus |
| WHO | - | World Health Organization |