List of Tables

Tables	litle	page
1.1	General properties of Fe ₂ O ₃ and compared with other the iron oxides	2
1.2	Properties and applications studied of bulk and nano hematite	3
1.3	Literature survey of solar water splitting materials	9
1.4	Literature survey of hematite as photo anode material	13
1.5	Uranium removal/extraction methodologies	18
1.6	Literature survey of adsorbents used for uranium removal from water	19
1.7	Fluorinated material and their applications	21
1.8	Fluorinating agents	23
2.1	Analytical grade chemical, formula and supplier	25
2.2	Summary of chemical reactions	26
3.1	Calculation of crystallite size (nm) of pristine and F-Fe ₂ O ₃ using Scherrer equation with respect to (104) and (110) planes	41
3.2	Elemental quantification of Fe, O and F in pristine and F-Fe ₂ O ₃ . The peak values are calibrated with reference to adventitious carbon at 284.8 eV	43
3.3	X-ray photoelectron spectra (XPS) literature reference of Fe 2p, O 1s and F 1s peaks	44
3.4	Charge carrier densities calculated from Mott Schottky plot	51
3.5	Fitting parameters from Nyquist plot of pristine and F-Fe ₂ O ₃ films	51
3.6	Photovoltaic performance parameters of the DSSC based on α-Fe ₂ O ₃ /TiO ₂ photoanode	52
3. 7	Parameters obtained by fitting equivalent circuit diagram using Nyquist plot for DSSC	54
4.1	List of synthesized fluorinated α -Fe ₂ O ₃ samples	57
4.2	Crystallite size of α -Fe ₂ O ₃ and fluorinated α -Fe ₂ O ₃ samples calculated suing (110) and (104) planes	59
4.3	M-H data for α -Fe ₂ O ₃ synthesized with different fluorinating agents using 20 wt. $\%$	61
4.4	M-H data for α -Fe ₂ O ₃ and F- α -Fe ₂ O ₃ synthesized with different wt. % of F-TEDA	62
5.1	Surface area and pore size of α -Fe ₂ O ₃ and F- α -Fe ₂ O ₃	74
5.2	Amount of Fluorine versus uranium removal efficiency	77
5.3	Kinetic parameters of U(VI) adsorbed onto F-α-Fe ₂ O ₃	80
5.4	Langmuir, Freundlich isotherm model constants and correlation coefficients	81
5.5	Literature survey of uranium removal using hematite/ Hematite composite	82