LIST OF TABLE

Table No	Table Caption	Page No
Table 2.1	Mechanism & properties of green synthesized TiO2	22
	nanoparticles using extracts from different parts of plants	
Table 2.2	Ratio of leaves extract to metal precursors in the synthesis	25
	process	
Table 2.3	TiO2 nanoparticles synthesized from different plants species	27
Table 2.4	Synthesis, characterization and application of SiO2	37
	nanoparticles obtained from biomass	
Table 3.1	Ratios of the leaves extract to metal precursor taken for TiO2	46
	synthesis	
Table 3.2	Crystallographic parameters for synthesized TiO2 NPs at	49
	different leaf extract ratio	
Table 3.3	UV-Visible absorption spectra of TiO2 nanoparticles	56
	synthesized using different ratios of Syzygium cumini (jamun)	
	leaf aqueous extracts	
Table 4.1	Synthesis of TiO2 nanoparticles from different plant extract	64
Table 4.2	Water characteristics before and after treatment	68
Table 4.3	ICP and COD values at different condition	69
Table 6.1	SiO2 synthesis with NaOH concentration variation	90
Table 6.2	SiO2 synthesis with temperature variation	90

LIST OF FIGURES

Figure No	Figure Caption	Page No
Figure 1.1	Classification of nano-particles	3
Figure 1.2	Bottom-up and top-down approaches for synthesizing nano-	4
	particles	
Figure 1.3	Advantages of green synthesis using plant components over	6
	microorganisms	
Figure 2.1	Mechanism of TiO2 nano-particles synthesis from TiCl4 and	16
	Jatropha curcas leaf extract	
Figure 2.2	Mechanism of TiO2 nanoparticles synthesis taking TTIP as	19
	metal precursor and Desmodium gangeticum root extract as	
	reducing agent	
Figure 2.3	Mechanism of TiO2 nanoparticles synthesis taking	20
	TiO(OH)2 as metal precursor and Annona squamosa peel	
	extract as reducing agent	
Figure 3.1	Preparation of Syzygium cumini (Jamun) leaves extract	44
Figure 3.2	Green synthesis of TiO2 nanoparticles	45
Figure 3.3	Antibacterial property test	47
Figure 3.4	X-ray patterns of TiO2 NPs at (a) 2:1, (b) 1:1, (c) 1:2 ratio of	48
	leaf extract to metal precursor	
Figure 3.5	HRSEM-EDX of synthesized TiO2 NPs (a) TiO2 (2:1), (b)	50
	TiO2 (1:1), and (c) TiO2 (1:2)	
Figure 3.6	TEM analysis and SAED pattern of synthesized TiO2 NPs at	52
	(a) 2:1 (b) 1:1 and (c) 1:2 ratio of leaf extract to metal	
	precursor	
Figure 3.7	Particle size distribution of synthesized TiO2 NPs at (a) 2:1	53
	(b) 1:1 and (c) 1:2 ratio of leaf extract to metal precursor	
Figure 3.8	N2 adsorption-desorption isotherms of synthesized TiO2	54
	NPs at (a) 2:1 (b) 1:1 and (c) 1:2 ratio of leaf extract to metal	

precursor

	preedisor	
Figure 3.9	UV- Visible spectra of synthesized TiO2 NPs (a) 2:1 (b) 1:1	55
	and (c) 1:2 ratio of leaf extract to metal precursor	
Figure 3.10	FTIR plot of (a) Syzygium cumini (jamun) extract; (b)	56
	Synthesized TiO2 NPs	
Figure 3.11	Zeta potential analysis of TTIP solution and TTIP with	58
	Syzygium cumini (jamun) extract	
Figure 3.12	Antibacterial test of the synthesized TiO2 NPs by Inhibition	59
	zone formation	
Figure 4.1	TiO2 used as photo catalyst for removal of lead (Pb)	66
Figure 4.2	COD analysis measurement steps	68
Figure 4.3	(a) Pb removal profile in UV and dark condition in the	71
	presence of synthesized TiO2 NPs; (b) Kinetic data for Pb	
	removal with synthesized TiO2 NPs.	
Figure 4.4	(a) COD removal profile in UV light; (b) First order kinetics	72
	plot for COD removal with the synthesized TiO2	
	nanoparticles.	
Figure 5.1	Photo catalytic degradation of methylene blue dye	79
Figure 5.2	FTIR plots of (a) TiO2 NPs, (b) PDMS nanocomposite	80
	polymer	
Figure 5.3	Contact angle analysis at the PDMS surface and PDMS-	81
	TiO2 surface	
Figure 5.4	UV spectra of methylene blue with time (a) without TiO2	82
	NPs (b) with TiO2 NPs	
Figure 5.5	Percentage degradation of dye with time	82
Figure 5.6	Pseudo-first-order kinetics for degradation of methylene blue	83
	with and without TiO2 NPs	
Figure 5.7	Reusability of immobilized TiO2 Nanoparticles	85
Figure 6.1	Synthesis processes of SiO2 nanoparticles from bamboo leaf	90
Figure 6.2	Immobilization of nanoparticles on PDMS polymer	91
Figure 6.3	X-Ray diffraction patterns of SiO2nanoparticles at different	93

NaOH concentration

Figure 6.4	FTIR spectra of synthesized SiO2 nanoparticles at different	94
	NaOH concentration	
Figure 6.5	HRSEM-EDAX image of synthesized SiO2 nanoparticles at	95
	(a) 0.5M NaOH (b) 1.0M NaOH	
Figure 6.6	(a) Particle size distribution, (b) N2 Adsorption/desorption	97
	isotherm of synthesized SiO2nanoparticles at different	
	NaOH concentration.	
Figure 6.7	(a) UV spectra of MB solution at different time interval, (b)	98
	MB degradation versus time (c) plots for pseudo-first order	
	in photocatalytic degradation	
Figure 6.8	Reusability of immobilized TiO2/SiO2/PDMS Film	99