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APPENDICES

Appendix A The UV-Vis Spectroscopy

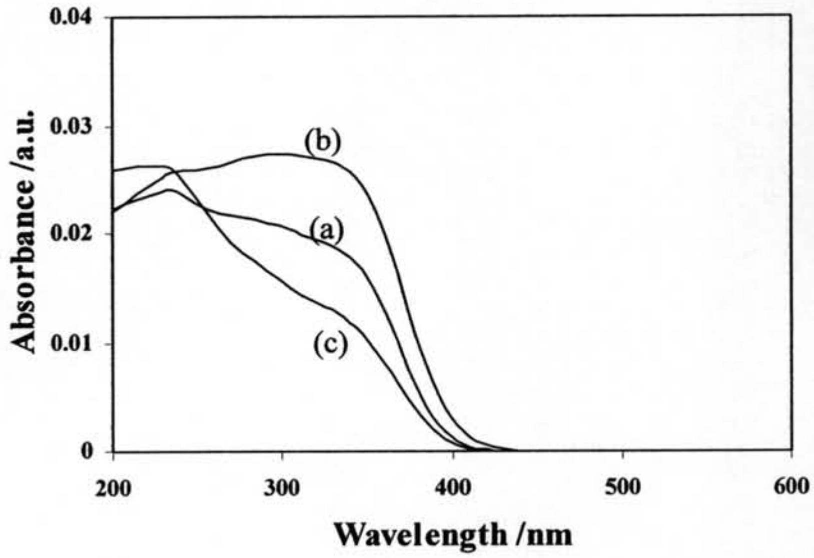

Figure A1 UV-Vis spectra of (a)-(c) N-doped mesoporous TiO_2 with different urea:TiO_2 molar ratios of 0.5:1, 1:1, and 3:1, respectively, prepared at calcination conditions of 200°C for 2 h.

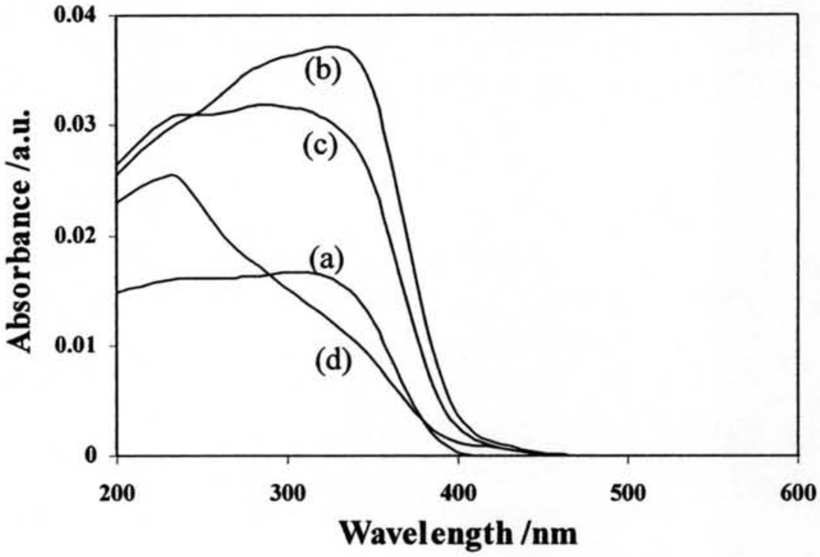

Figure A2 UV-Vis spectra of (a) pure nanocrystalline mesoporous TiO_2 and (b)-(d) N-doped mesoporous TiO_2 with different urea:TiO_2 molar ratios of 0.5:1, 1:1, and 3:1, respectively, prepared at calcination conditions of 250°C for 2 h.

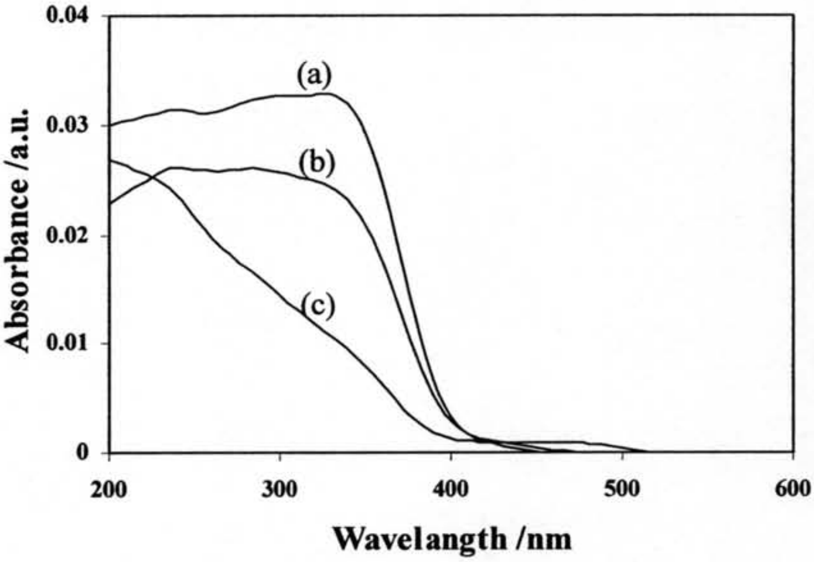

Figure A3 UV-Vis spectra of (a)-(c) N-doped mesoporous TiO_2 with different urea:TiO_2 molar ratios of 0.5:1, 1:1, and 3:1, respectively, prepared at calcination conditions of 300°C for 2 h.

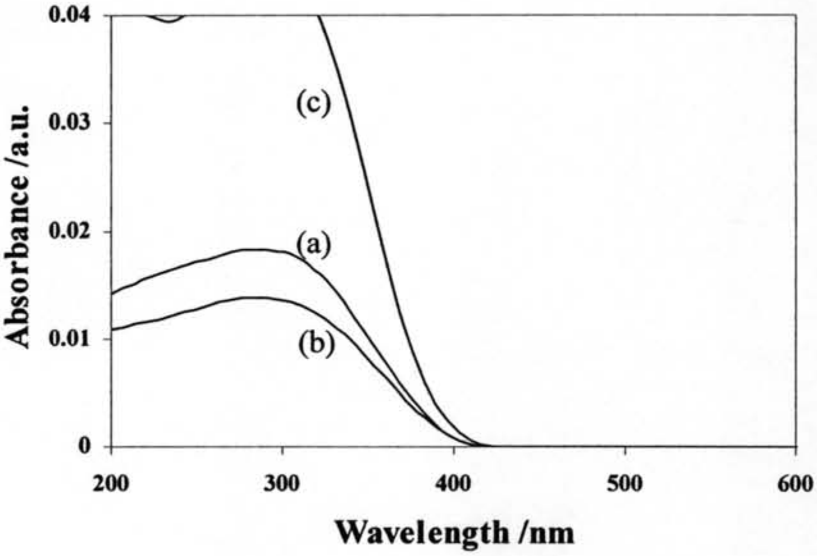

Figure A4 UV-Vis spectra of (a)-(c) N-doped commercial Degussa P-25 TiO_2 with different urea:TiO_2 molar ratios of 0.5:1, 1:1, and, 3:1, respectively, prepared at calcination conditions of 200°C for 2 h.

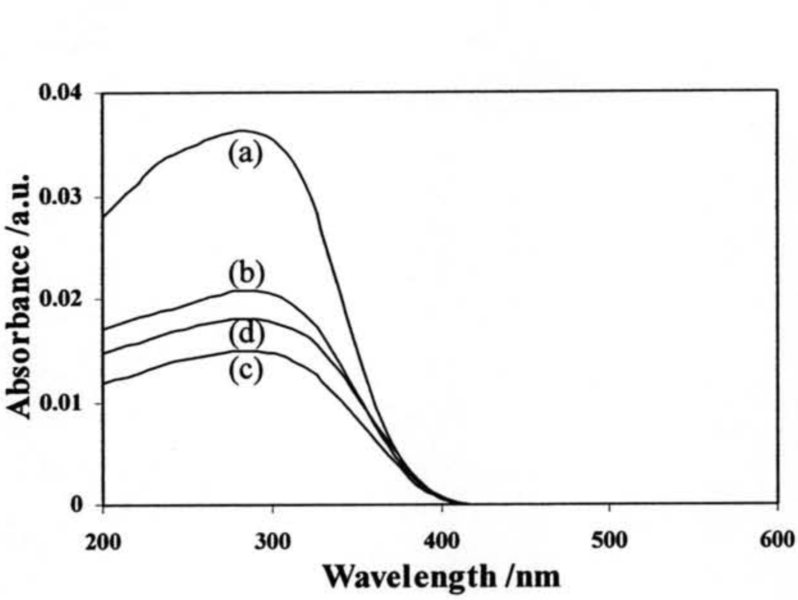

Figure A5 UV-Vis spectra of (a) commercial Degussa P-25 TiO_2 and (b)-(d) N-doped commercial Degussa P-25 TiO_2 with different urea:TiO_2 molar ratios of 0.5:1, 1:1, and, 3:1, respectively, prepared at calcination conditions of 250°C for 2 h.

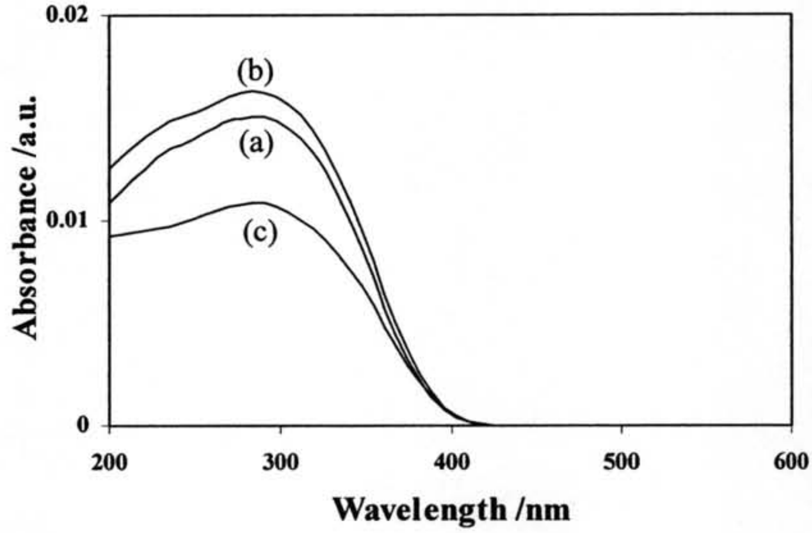

Figure A6 UV-Vis spectra of (a)-(c) N-doped commercial Degussa P-25 TiO_2 with different urea:TiO_2 molar ratios of 0.5:1, 1:1, and, 3:1, respectively, prepared at calcination conditions of 300°C for 2 h.

Appendix B Crystallite Size of Photocatalyst

The average crystallite size was calculated from the line broadening of X-ray diffraction peak using the Sherrer formula as expressed by the following Eq.

$$L = k\lambda/\beta\cos\theta$$

where L is the crystallite size, k is the Sherrer constant usually taken as 0.89, λ is the wavelength of the X-ray radiation (0.15418 nm for $CuK\alpha$), and b is full width half maximum (FWHM) of diffraction peak measured at 2θ.

Table A1 The summary of crystallite size of TiO_2 photocatalysts

Photocatalyst	Calcination temperature /°C	Urea:TiO_2 molar ratio	Crystallite size /nm	
			anatase	rutile
Synthesized mesoporous TiO_2		Pure mesoporous TiO_2	13.36	-
	200	0.5:1	14.49	-
		1:1	14.13	-
		3:1	14.89	-
	250	0.5:1	14.24	-
		1:1	14.34	-
		3:1	14.47	-
	300	0.5:1	14.46	-
		1:1	13.94	-
		3:1	14.89	-
Degussa P-25 TiO_2		Pure Degussa P-25 TiO_2	21.48	30.19
	200	0.5:1	21.09	29.75
		1:1	20.82	31.74
		3:1	20.70	13.93
	250	0.5:1	21.31	28.09
		1:1	21.60	30.65
		3:1	22.57	9.94
	300	0.5:1	21.31	28.59
		1:1	21.54	32.76
		3:1	21.95	22.73

Table A2 The summary of crystallite size of Pt-loaded N-doped mesoporous TiO_2 photocatalysts prepared at urea:TiO_2 molar ratio of 1:1

Nominal Pt loading /wt%	**Anatase crystallite size /nm**
0.4	13.79
0.8	13.70
1.0	13.49
1.1	12.36
1.3	13.59
1.4	14.54
1.6	12.79

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