

**Table 2.2.** Experimental conditions for  $\text{TiO}_2$ -photocatalyzed arsenite oxidation studies.

	Initial [As(III)]	$\text{TiO}_2$ loading	pH	$\text{O}_2$ availability	Light source/intensity	Sampling method	Time for reaction completion
Yang et al. (1999)	525 $\mu\text{M}$	2 $\text{g L}^{-1}$ , P25	9 (initially), HCl/NaOH	Sparged with air or $\text{N}_2$	400 W medium pressure Hg arc lamp; 18.3 $\mu\text{Einstein min}^{-1}$ inside photoreactor	Aliquot removal; 450 mL reaction vessel	20 min
Bissen et al. (2001)	0.67–135 $\mu\text{M}$	0.001–0.05 $\text{g L}^{-1}$ , P25	Not usually measured; 5, 7, 9 in one study (initially), HCl/NaOH	Air equilibrated	Solar UV Simulator; 1000 W Xe arc lamp	Batch, 10 mL sample volume	1 – ~15 min
Lee and Choi (2002)	500 $\mu\text{M}$	1.5 $\text{g L}^{-1}$ , P25	3, 9 (initial), HCl/NaOH	Air equilibrated or sparged with $\text{N}_2$	300 W Xe arc lamp; $300 < \lambda < \text{IR}$	Aliquot removal; 90 mL reaction vessel	2 hrs
Jayaweera et al. (2003)	1,330 $\mu\text{M}$	0.25 $\text{g L}^{-1}$ , 2.5 $\text{g L}^{-1}$ , BDH Chemicals	Maintained at 7; tested pH 1–13 but data not shown	Air equilibrated /sparged with age number landscapeair	250 W medium pressure Hg arc lamp and sunlight	Aliquot removal	90 min
Ryu and Choi (2004)	500 $\mu\text{M}$	0.5 $\text{g L}^{-1}$ , P25	3, 9 (initial), HCl/NaOH	Air equilibrated or sparged with $\text{N}_2$	300 W Xe arc lamp; $300 < \lambda < \text{IR}$	Aliquot removal; 90 mL reaction vessel	4 hrs
Dutta et al. (2005)	40–333 $\mu\text{M}$	0.01 or 0.1 $\text{g L}^{-1}$ , P25 and Hombikat UV100	Maintained at 3, 4, 7 and 9 (HCl/NaOH)	Air equilibrated, some sparging with $\text{O}_2$ or $\text{N}_2$	125 W high pressure Hg, $\lambda_{\text{max}} = 365 \text{ nm}$ , 21.3 $\text{mW cm}^{-2}$ and lower	Flow-through with periodic effluent sampling	12 – ~100 min
Xu et al. (2005)	13.4 $\mu\text{M}$	0.1 and 1.0 $\text{g L}^{-1}$ , P25	Not considered	Sparged with air or Ar before reaction	Low pressure Hg lamp, 350 nm; 1.5 – 5.0 $\mu\text{Einstein min}^{-1} \text{cm}^{-2}$	Aliquot removal, 100 mL reaction vessel	5 – 7 min
Pena et al. (2005)	26.7 $\mu\text{M}$	0.2 $\text{g L}^{-1}$ , nanocrystalline	Maintained at 7	Air equilibrated	Room light (natural + fluorescent) Sunlight	Aliquot removal	24 hours 20 min