

Supplementary Information

Direct Synthesis of α -Bromoketones from Alkylarenes by Aerobic Visible Light Photooxidation

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1. General Information.

All dry solvents were obtained from Kanto Kagaku Co., Ltd. Other chemicals used were of reagent grade and were obtained from Aldrich Chemical Co., Tokyo Kasei Kogyo Co., Ltd. and Wako Pure Chemical Industries, Ltd. ^1H NMR and ^{13}C NMR spectra were obtained on a JEOL AL 400 spectrometer or JEOL EX 400 spectrometer (400 MHz for ^1H NMR and 100 MHz for ^{13}C NMR). Chemical shifts (δ) are reported in parts per million (ppm) downfield from internal Me_4Si . Mass spectra (MS) were obtained on a JEOL JMS-SX102A instrument. Preparative thin-layer chromatography (TLC) was carried out on precoated plates of silica gel (MERCK, silica gel F-254).

2. General Procedure for Aerobic oxidation of Alkylarenes under visible light irradiation of fluorescent lamp.

A Typical Example (Table 1, Entry 3). A dry EtOAc solution (5 mL) of the ethylbenzene (**1**) (31.8 mg, 0.3 mmol), H_2O (100 μL), and 48% aq. HBr (40.7 μL , 0.36 mmol) in a pyrex test tube equipped with an O_2 balloon was stirred and irradiated with four 22 W fluorescent lamps, which were set up at a distance of 65 mm, for 10 h. The temperature of the final stage of this reaction was about 40 $^\circ\text{C}$. The reaction mixture was concentrated under reduced pressure, and the pure product was obtained by preparative TLC.



























