1) Supporting Information

Pentafluorophenyl Transfer: a New Group Transfer Reaction in

Organoborate Salts.

By

Priyadarshine Hewavitharanage, Evgeny O. Danilov and Douglas C. Neckers* Center for Photochemical Sciences* Bowling Green State University Bowling Green, OHIO 43403

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General methods

All inert manipulations were performed under an argon atmosphere using Schlenk techniques. Solvents were purchased from Aldrich. Diethyl ether, THF and hexane were distilled under argon over sodium benzophenone, and dichloromethane was distilled over CaH₂. Distilled water was de-oxygenated by purging with argon before use. NMR solvents used in irradiation experiments were dried over 4A° molecular sieves and ¹H, ¹³C spectra were taken using a Varian Gemini 200 NMR spectrometer and a Utility Plus 400 NMR spectrometer. ¹⁹F NMR spectra and ¹¹B NMR spectra were recorded using Utility Plus 400 NMR spectrometer and referenced externally to CFCl₃ and BF₃.OEt₂ respectively. GC/MS were taken on a Hewlett-Packard 5988 mass spectrometer coupled to an HP 5880A GC with a 30 m x 0.25 mm ID 0.25 mm film thickness DB-5 ms column (J & B Scientific), interfaced to an HP 2623A data processor. UV – visible spectra were recorded using a Shimadzu UV-2401(PC) spectrophotometer. Melting points were determined with a Thomas Hoover capillary melting point apparatus and are uncorrected. High-resolution mass spectral analyses were performed by the Mass Spectrometry Laboratory, University of Illinois at Urbana-Champaign, IL. Elemental analyses were performed by Atlantic Microlab Inc. in Norcross, GA. Nanosecond laser flash photolysis experiments were carried out using the third (355 nm) harmonic of a Q-switched Nd:YAG laser (Continuum, Surelite I) as the excitation source. The pulse widths was ca. 7 ns. The transient species were monitored at 90° with respect to the laser beam using a 150 W xenon arc lamp, and a Hamamatsu R928 photomultiplier tube. A Tektronix TDS 380 digital oscilloscope (400 MHz bandpass) was employed to convert the signal to digital form. The sample solutions were placed in 1-cm² quartz cuvettes and degassed continuously with argon during the experiment.

Materials

Tris(pentafluorophenyl)borane, isoquinoline, quinoline, phenanthridine, and dichlorophenylborane were purchased from Aldrich. Isoquinoline and quinoline were dried over $CaSO_4$ and distilled under argon before use.





 $^{13}\mathrm{C}$ NMR of compound 1(400 MHz, CD₂Cl₂)

S5







S7



S8



















Transient absorption spectra of $\mathbf{5}$ in acetonitrile at different delay times



Transient absorption spectra of 1 in acetonitrile at different delay times



Transient absorption spectra of 9 in acetonitrile at different delay times



Kinetics at 360 nm of **1**, **5**, **9**