

Supporting Information

Selective Oxidation of sp^3 C-H Bonds in Water Catalyzed by a Glycinate-Platinum(II) Complex

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General Information: All air and/or moisture sensitive compounds were manipulated by using standard high-vacuum line, Schlenk, or cannula techniques, or in a glove box under a nitrogen atmosphere. Compound **2** was prepared by literature methods.¹ All other starting materials are commercially available and used as received without further purification. All NMR spectra were recorded at room temperature using a Varian Mercury 300 spectrometer.

Synthesis of Compound 5: $K[Pt^{II}(\text{glycine})Cl_2]$ was synthesized by using a modified literature procedure.²⁻⁴ $K_2Pt^{II}Cl_4$ (1g, 2.4 mmol) and glycine (0.18g, 2.4 mmol) were added to a round bottom flask. Water (25 mL) was added, and the reaction mixture was heated to 100 °C using an oil bath. After heating for 10 minutes, 1 equivalent of KOH (0.135g in 20 mL water) was added dropwise to the reaction mixture. The color of the solution turned from red to yellow. The solvent was removed under vacuum and pure $K[Pt^{II}(\text{glycine})Cl_2]$ was recrystallized from a 9:1 ethanol:water mixture. Yield: 0.27g, 30%.

Oxidation of Sodium *p*-Toluenesulfonate and Compound 2: Reactions were carried out on solutions of 0.013 M $K_2Pt^{II}Cl_4$ or $K[Pt^{II}(\text{glycine})Cl_2]$, 0.11 M $Na_2Pt^{IV}Cl_6$, and 0.155 M sodium *p*-toluenesulfonate in 3 mL of D_2O . In a typical experiment, the reaction mixture was prepared in a 20 mL glass vial. A magnetic stir bar was then added and the vial was sealed using a Teflon screw cap. The vial was then heated to the desired temperature using an oil bath. Formation of products was monitored by following the growth of the corresponding 1H NMR signals. Direct oxidation of **2** (prepared independently) to **3** was carried out using the same procedure. The starting materials and products are all known compounds.⁵

References:

- (1) Hubbuck, A.; Bindewald, R.; Fohles, J.; Naithani, V. K.; Zahn, H. *Angew. Chem. Int. Ed. Engl.* **1980**, *19*, 394-396.
- (2) Erickson, L. E.; McDonald, J. W.; Howie, J. K.; Clow, R. P. *J. Am. Chem. Soc.* **1968**, *90*, 6371-6382.
- (3) Erickson, L. E.; Dappen, A. J.; Uhlenhopp, J. C. *J. Am. Chem. Soc.* **1969**, *91*, 2510-2513.
- (4) Erickson, L. E.; Erickson, M. D.; Smith, B. L. *Inorg. Chem.* **1973**, *12*, 412-422.

(5) Labinger, J. A.; Herring, A. M.; Lyon, D. K.; Luinstra, G. A.; Bercaw, J. E.; Horváth, I. T.; Eller, K. *Organometallics* **1993**, *12*, 895-905.