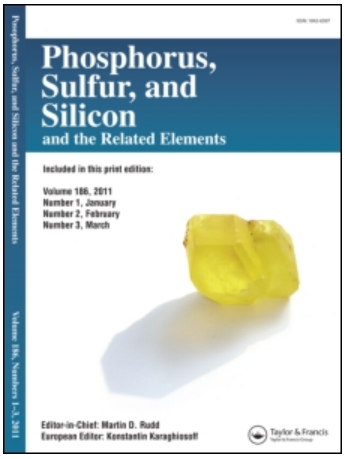

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SYNTHESIS AND APPLICATION OF NEW TRIDENTATE ANTHRACENE LIGANDS BEARING DONATIVE PHOSPHORUS(III) ATOMS AT 1,8-POSITIONS

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A new potential tridentate ligand, 1,8-bis(diisoproprylphosphino)-9-bromoanthracene **1**, was prepared in five steps from 1,8-dichloroanthraquinone **2**. 1,8-Dibromo-9-methoxyanthracene **3** could be prepared in three steps from **2** in good yields. Although 1,8-bis-(disubstituted phosphino)-9-methoxyanthracene **4a** and **4b** could be prepared from **3**, reduction by LDBB (lithium di-*tert*-butylbiphenylide) was not successuful in **4b**. In contrast, 1,8-bis(diisopropylphosphino)-9-methoxyanthracene **1a** was obtained in 51% yield by reduction with LDBB followed by treatment with $BrCF_2CF_2Br$. ORTEP drawing of **5** is shown (Figure 1). Shorter P—B bond length is 2.14(1) Å and the longer

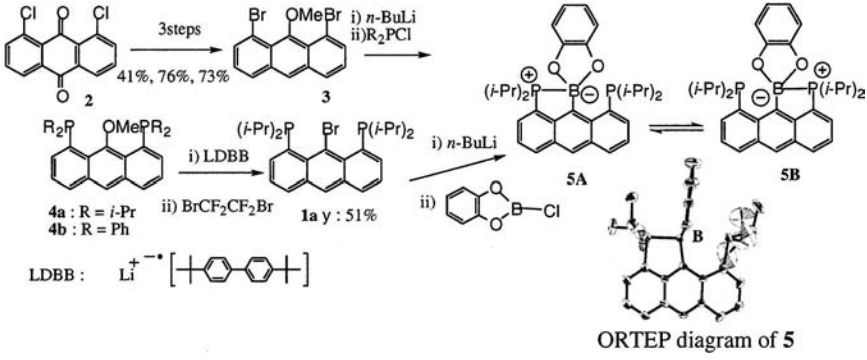

FIGURE 1 Synthesis and X-ray structure of **5**.

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P—B length is 3.17(1) Å. Although the longer P—B length is shorter than the sum of the van der Waals radii (3.98 Å), the structure of the boron atom should be regarded to be tetracoordinated. Thus, only one of the two *i*-Pr_2P groups were coordinating toward the boron atom.

However, ^1H NMR of **5** showed a symmetrical anthracene pattern (two kinds of doublets and a triplet) at room temperature. In addition, only one signal was observed in the ^{31}P NMR. These NMR data indicate that the very rapid bond switching process (**5A**⇆**5B**) is taking place in solution.