LITERATURE CITED

1. D. P. Curran, Synthesis, 417 (1988).
2. N. A. Porter and V. H.-T. Chang, J. Am. Chem. Soc., 109, 4976 (1987).
3. N. A. Porter, B. Lacher, V. H.-T. Chang, and D. R. Magnin, J. Am. Chem. Soc., 111, 8309 (1989).
4. D. V. Demchuk, É. I. Troyanskii, and G. I. Nikishin, Izv. Akad. Nauk SSSR, Ser. Khim., No. 6, 1443 (1989).
5. É. I. Troyanskii, Yu. A. Strelenko, D. V. Demchuk, et al., Izv. Akad. Nauk SSSR, Ser. Khim., No. 5, 1191 (1990).

SYNTHESIS OF SUBSTITUTED BENZYLTRIMETHYLSILANES FROM TETRAMETHYLAMONIUM TETRAKIS(TRIMETHYLSILYLMETHYL) BORATE AND ARYL HALIDES

N. A. Bumagin, V. V. Bykov, G. A. Artamkina, and I. P. Beletskaya

UDC 542.91:547.1'128'127:547.539

Substituted benzyltrimethylsilanes are obtained in the reaction of the corresponding benzylmagnesium halides with trimethylchlorosilane [1]. When the benzyl halide molecule has substituents sensitive to the active organometallic compounds, the reaction of benzyl halides with hexamethyldisilane catalyzed by palladium complexes may be used for synthesis [2]. However, the reaction is carried out under very vigorous conditions (120-180°C for 10-90 h) and the yield of $ArCH_2SiMe_3$ in a number of cases does not exceed 6-8%.

We have shown that tetramethylammonium tetrakis(trimethylsilylmethyl) borate reacts with aryl halides in THF at reflux in the presence of $PdCl_2(dppf)$ [dppf = 1,1'-bis(diphenylphosphino)ferrocene] with the formation of the corresponding benzyltrimethylsilanes in high yields.

$$(Me_3SiCH_2)_4BNMe_4 + YC_6H_4X \xrightarrow[\text{THF, }\Delta\text{, 1 h}]{\text{1mole\% }PdCl_2(dppf)} Me_3SiCH_2C_6H_4Y.$$

When Y = p-Cl and X = I in YC_6H_4X, the yield of the cross-coupling product was 72%. When Y = p-Cl and X = Br, the yield of the cross-coupling product was 98%. When Y = p-Ac and X = Br, the yield of the cross-coupling product was 75%. When Y = m-NO_2 and X = I, the yield of the cross-coupling product was 72% The yields were determined by gas-liquid chromatography.

Under the given conditions, $(Me_3SiCH_2)_4BLi$ proved less reactive. The yield in the reaction with p-ClC_6H_4I after 80 min was 19%. The addition of water to the reaction mixture (H_2O:THF = 1:4) leads to an acceleration of the reaction. The yield of p-$ClC_6H_4CH_2SiMe_3$ after 2 h was 83%.

LITERATURE CITED

1. B. C. Eaborn and S. H. Parker, J. Chem. Soc., 939 (1954).
2. D. Azarian, S. S. Dua, C. Eaborn, and D. R. Walton, J. Organomet. Chem., 117, C55-C57 (1976).

M. V. Lomonosov Moscow State University. Translated from Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No. 11, p. 2664, November, 1990. Original article submitted July 2, 1990. 1990.