# SYNTHESIS OF DIARYLS FROM PHENYLBORIC ACID AND ARYL IODIDES IN AN AQUEOUS MEDIUM

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The cross coupling of aryl halides is a convenient method for the synthesis of diaryls with virtually any functional groups. The reaction is usually carried out in a system containing benzene and aqueous alkali in the presence of 3 mole % $Pd(PPh_3)_4$ at reflux.

We have shown that the reaction of phenylboric acid with aryl iodides such as m-, p-, and o-$IC_6H_4CO_2H$ and p-$IC_6H_4OH$ dissolved in water in the presence of base proceeds in the absence of an organic solvent. $Pd(OAc)_2$ may be used as the catalyst and sodium carbonate may be used as the base. The yields of asymmetrical diaryls vary from 70 to 95%

$$ArI + PhB(OH)_2 \xrightarrow[Na_2CO_3/H_2O,\ 20°]{Pd(OAc)_2,\ 1\text{ mole }\%} ArPh \quad (70—95\%)$$

ArI = *m*-$IC_6H_4COOH$; *p*-$IC_6H_4COOH$; *o*-$IC_6H_4COOH$; *p*-$IC_6H_4OH$.

A mixture of 0.318 g (3 mmoles) $Na_2CO_3$, 0.248 g (1 mmole) m-$IC_6H_4CO_2H$, 0.134 g (1.1 mmoles) $PhB(OH)_2$, and 0.0022 g (0.01 mmole) $Pd(OAc)_2$ was dissolved in 4 ml water in an argon atmosphere and stirred for 90 min at ~20°C. Palladium black was filtered off. The filtrate was acidified by the addition of hydrochloric acid. The precipitate formed was filtered off, washed with water, and dried to give 0.185 g (93%) m-phenylbenzoic acid, mp 165-166°C [3].

## LITERATURE CITED

1. N. Myaura, T. Yanagi, and A. Suzuki, Synth. Commun., 11, No. 7. 513 (1981).
2. R. B. Miller and S. Dugar, Organometallics, 3, No. 8, 1261 (1984).
3. Beilsteins Handbuch der Organischen Chemie, 2nd ed., Vol. 9, Berlin, p. 464.

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