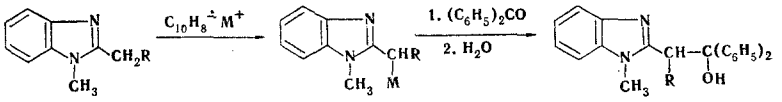
ORGANOLITHIUM AND ORGANOSODIUM COMPOUNDS OF 1,2-DIALKYLBENZIMIDAZOLES

B. A. Tertov, A. S. Morkovnik, and Yu. G. Bogachev

UDC 547.785.5:542.957

We have established that 1,2-dialkylbenzimidazoles (Ia-c) react readily with naphthyllithium or naphthylsodium in tetrahydrofuran (THF) at 0°C to give organolithium and organosodium compounds IIa-f, which are converted to carbinols III on reaction with benzophenone.



Ia-c IIa-f IIIa-c

I, III a R=H; b R=CH_3; c R=C_2H_5; II a R=H; M=Li; b R=H; M=Na; c R=CH_3; M=Li; d R=CH_3; M=Na; e R=C_2H_5; M=Li; f R=C_2H_5; M=Na

1-Methyl-2-(2,2-diphenyl-2-hydroxyethyl)benzimidazole (IIIa) was also obtained from 1-methyl-2-chloromethylbenzimidazole and dilithiobenzophenone. The PMR spectrum of 1-methyl-2-(1-methyl-2,2-diphenyl-2-hydroxyethyl)benzimidazole (IIIb) in $CHCl_3$ contains signals at 1.15 (d, C−CH_3), 1.95 (s, OH), 3.52 (s, N−CH_3), 4.06 (q, C−H), and 6.6-7.6 ppm (m, aromatic protons), in conformity with the assigned structure.

A 13-mmole sample of 1,2-dialkylbenzimidazole was added at 0° in the course of 15 min in an argon atmosphere to naphthyllithium or naphthylsodium obtained from 28.8 mg-atom of alkali metal and 3.6 g (28.1 mmole) of naphthalene in 20 ml of THF, after which the reaction was carried out for another 15 min. The resulting organometallic compound was converted to alcohol III by the action of benzophenone. Compounds IIIa-c were obtained in 70-96% yields and had mp 194-195° (from alcohol), 168-169° (from benzene), and 162-163° (from alcohol), respectively. The results of elementary analysis for IIIa-c were in agreement with the calculated values.

Organolithium compounds IIa, c, e are formed in small amounts when naphthyllithium is replaced by butyllithium.

Rostov State University. Scientific-Research Institute of Physical and Organic Chemistry, Rostov-on-Don. Translated from Khimiya Geterotsiklicheskikh Soedinenii, No. 12, pp. 1699-1700, December, 1976. Original article submitted July 6, 1976.