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> LETTERS TO THE EDITOR

Meerwein Reaction of Benzothiazole-2-diazonium Tetrafluoroborate

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Reactions of unsaturated compounds with diazonium salts derived from benzothiazol-2-amines were not reported [1–6]. Presumably, the reason is that benzothiazole-2-diazonium salts can be obtained only by diazotization in the presence of a large excess of concentrated sulfuric acid, whereas unsaturated compounds undergo tarring in such diazonium salt solutions. We recently proposed to use 3-(1,3-benzothiazol-2-yl)-1,1-dimethyltriazenes as reagents alternative to 1,3-benzothiazole-2-diazonium salts [7, 8]. We have found that styrene reacts with 1,3-benzothiazole-2-diazonium tetrafluoroborate in aqueous acetone at $8-10^{\circ}$ C provided that the reaction mixture contains concentrated hydrochloric acid and copper(II) chloride. The reaction is accompanied by liberation of nitrogen from the diazonium group, the product is 1-(1,3-benzothiazol-2-yl)-2-phenylethene (I); it is formed by replacement of hydrogen in the methylene group of styrene by a benzothiazolyl group.

The structure of compound I was proved by the ¹H NMR data. The ¹H NMR spectrum of I contained a doublet at δ 7.658–7.673 ppm from the ethylene protons, which was not overlapped by the other signals.

1-(1,3-Benzothiazol-2-yl)-2-phenylethene (I). A three-necked flask was charged with 4 ml of styrene, 12 ml of acetone, 6 ml of concentrated hydrochloric acid, and 0.8 g of CuCl₂, and 4.7 g of 1,3-benzothiazole-2-diazonium tetrafluoroborate was added in small portions under continuous stirring, maintaining the temperature at $8-10^{\circ}$ C. When the addition was complete, the mixture was allowed to warm up to room temperature, stirred until nitrogen no longer evolved, poured into 200 ml of water, and extracted with diethyl ether. The solvent was evaporated at room temperature, and the residue was recrystallized from

ethanol–water (2:1). Yield 0.7 g (16%), light yellow crystalline substance, mp 105–106°C. ¹H NMR spectrum, δ , ppm: 7.391–7.455 m (4H, *m*-H, *p*-H, 6-H), 7.516–7.536 t (1H, 5-H), 7.658–7.673 d (2H, CH=CH, J = 6.0), 7.783–7.801 d (2H, *o*-H, J = 7.2), 7.992–8.012 d (1H, 7-H, J = 7.6), 8.096–8.115 d (1H, 4-H, J = 7.6). Found N, %: 6.27, 6.12. C₁₅H₁₁NS. Calculated N, %: 5.90.

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