BENZIMIDAZOLES FROM QUATERNARY AND BISQUATERNARY SALTS OF 2,1,3-BENZOSELENODIAZOLE

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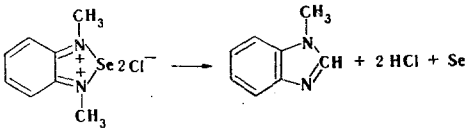
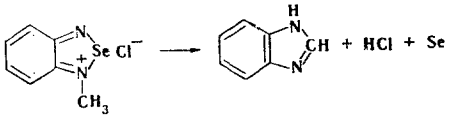
We have observed that bisquaternary salts of 2,1,3-benzoselenodiazole [1] undergo recyclization to give N-methylbenzimidazole when they are heated to 70-140°C in various solvents (dimethylacetamide, triethylamine, and thionyl chloride) and without a solvent.



N-Methyl-2,1,3-benzodiazolium chloride undergoes similar recyclization when it is heated to 165°C without a solvent to give benzimidazole.



The recyclization proceeds with the liberation of a large amount of heat, and the reaction proceeds explosively in the case of rapid heating. A side product is N-methylbenzimidazole, which is formed due to alkylation of benzimidazole by the N-methyl-2,1,3-benzoselenodiazolium salt to give 2,1,3-benzoselenodiazole, which is also detected in the reaction products.

The recyclization evidently is general in character, since 2-phenylbenzimidazole is formed in quantitative yield from N-benzyl-2,1,3-benzoselenodiazolium chloride. This reaction takes place in the cold in trifluoroacetic acid, but heating is required in dimethylacetamide.

The reaction products are identical to benzimidazole, N-methylbenzimidazole, and 2-phenylbenzimidazole obtained by alternative synthesis.

LITERATURE CITED

1. G. I. Eremeeva, Yu. I. Akulin, T. N. Timofeeva, B. Kh. Strelets, and L. S. Efros, Khim. Geterotsikl. Soedin., No. 8, 1135 (1980).

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