ACYLATION OF 5-AMINOTETRAZOLE IN N,N-DIMETHYLACETAMIDE MEDIUM

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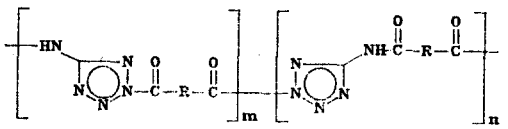
It is known that the condensation of 5-aminotetrazole (I) with dicarboxylic acid chlorides in cold pyridine is accompanied by scission of the tetrazole ring, and the resulting polymer contains oxazoline segments in its monomer units [1]. Acylation of tetrazoles in a two-phase system also gives 1,3,4-oxazolines, but only when the intermediates $N_{(2)}$-acyl derivative is heated to 100-120° [2].

We have found that when compound I is polycondensed with dicarboxylic acid chlorides in N,N-dimethylacetamide at room temperature, just as in acylation under interphase catalysis conditions, the tetrazole ring is not split, and the final products are amidic oligomers (oligoamides). The reason for their low molecular weight is apparently the different reactivity of the reactive centers of I, and the related nonequivalence of the monomer functional groups.

When tetrazole I reacts with dicarboxylic acid chlorides in N,N-dimethylacetamide at room temperature, 0.3 M monomer concentration, and 1000 rpm stirring rate, oligoamides are obtained that can be characterized with allowance for the nonregular structure by the following general formula:



II—V $R=(CH_2)_i$; VI $R=CH=CH$; VII $R=p\text{-}C_6H_4$; II $i=2$, III $i=3$, IV $i=4$, V $i=8$; $(m+n)\leqslant 6$

The proportion of monomer units described by the general formula depends on the nature of R. The bands in the oligoamide IR spectra that correspond to heterocycle vibrations agree with the data of [3].

II: mp 210°, yield 62%, IR spectrum (thin layer): 1735 (C=O), 700, 3080, 3220 (NH), 1400, 2860, 2930 (CH_2), 1680 cm^{-1} (NH—C=O); M 1000. VI: mp 170°, yield 85%, IR spectrum (thin layer): 1710 (C=O), 7106, 3085,3225 (NH), 1425, 2882, 2985 (CH_2), 1675 cm^{-1} (NH—C=O); M 1150. VII: mp 230°, yield 92%. IR spectrum (thin layer): 715, 3092, 3230 (NH), 1422, 2885, 2963 (CH_2), 1680 cm^{-1} (NH—C=O); M 680. Elemental composition of all these compounds differed from the calculated values by not more than 3% rel., which is to be explained by their oligomeric character.

LITERATURE CITED

1. L. Stoicescu-Crivat and M. Bruma, Rev. Roum. Chim., 12, 1245 (1967).
2. T. F. Osipova, G. I. Koldobskii, and V. A. Ostrovskii, Zh. Org. Khim., 20, 1119 (1984).
3. M. M. Sokolova, V. V. Mel'nikov, V. A. Ostrovskii, G. I. Koldobskii, A. A. Mel'nikov, and B. V. Gidaspov, Zh. Org. Khim., 11, 1744 (1975).

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