REACTION OF N-ACYL PYRIDINIUM AND BENZO-PYRIDINIUM SALTS WITH THIOPHENE AND SELENOPHENE*

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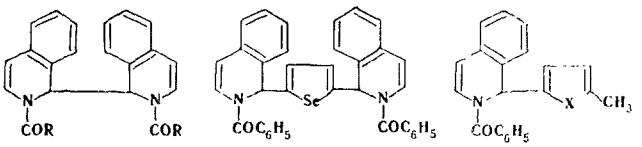
UDC 547.734.739.3'833.9

It has been established [1] that N-acylpyridinium and N-acylbenzopyridinium salts can exist in the form of charge-transfer complexes which decompose into free N-acylheteroaromatic radicals. In the reaction of N-acylisoquinolinium and N-acylquinolinium salts with thiophene, benzo[b]thiophene, and benzene, we obtained only the dimers (I) of the N-acyl radicals formed as intermediates. We have also obtained compounds of type (I) in the bimolecular reduction of isoquinoline and quinoline in acetic anhydride or in the presence of benzoic anhydride by the Dimroth reaction [2]. The reaction of N-acyl pyridinium and N-acylacridinium salts did not take place under the same conditions. However, the reaction of N-acylisoquinolinium salts with the more nucleophilic selenophene, 2-methylselenophene, and 2-methylthiophene gave, as well as the dimers (I), hetarylation products to which, by analogy with the compounds obtained previously [3, 4], the structures (II-IV) have been assigned.



I II III, IV

III X = Se; IV X = S

2,5-Di(2-benzoyl-1,2-dihydroisoquinolin-1-yl)selenophene (II), yield 35%, mp 155-156°C (from cyclohexane); R_f 0.12 [Al_2O_3 of activity grade II; chloroform–benzene–hexane (30 : 6 : 1)]; IR spectrum, cm^{-1}: 1663, 1626, 2730. Found, %: C 72.7; H 4.6; N 4.7; Se 12.9. Mol. wt. (Rast) 594. $C_{36}H_{26}N_2O_2Se$. Calculated, %: C 72.4; H 4.4; N 4.7; Se 13.2. Mol. wt. 597. 2-(2-Benzoyl-1,2-dihydroisoquinolin-1-yl)-5-methylselenophene (III), yield 42%, mp 114-115°C (from ether); R_f 0.8. IR spectrum, cm^{-1}: 1660, 1610, 2735. Found, %: C 66.4; H 4.8; N 4.0; Se 20.5. $C_{21}H_{17}NOSe$. Calculated, %: C 66.7; H 4.5; N 3.7; Se 20.9. 2-(2-Benzoyl-1,2-dihydroisoquinolin-1-yl)-5-methylthiophene (IV), yield 4%, mp 95-96°C (from ether); R_f 0.8; IR spectrum, cm^{-1}: 1680, 1515, 1610. Found, %: C 76.1; H 5.0; N 4.7; S 9.8. $C_{21}H_{17}NOS$. Calculated, %: C 76.1; H 5.2; N 4.2; S 9.7.

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*Communication XXIV of the series "Reactions of Cyclammonium Cations."

Donetsk State University. Translated from Khimiya Geterotsiklicheskikh Soedinenii, No. 8, p. 1147, August, 1973. Original article submitted November 3, 1972.