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ЗАМОНАВИЙ КИМЁНИНГ ДОЛЗАРБ МУАММОЛАРИ

мавзусидаги Республика миқёсидаги хорижий олимлар иштирокидаги онлайн илмий-амалий анжумани

МАТЕРИАЛЛАР ТЎПЛАМИ

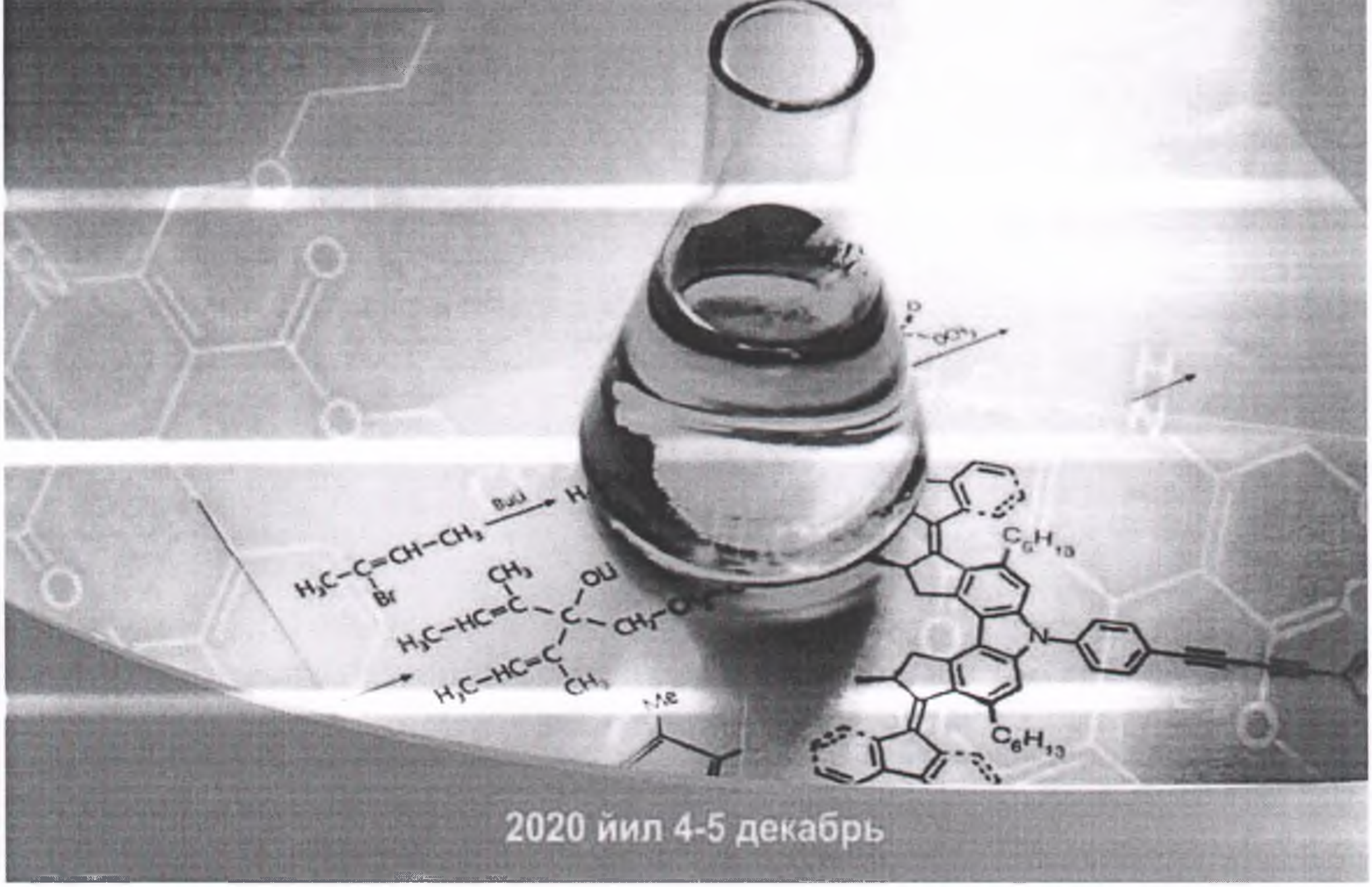

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Table 1

Some analytical characteristics of Fe(III) determination method in solution by N-MAC and immobilized N-MAC

Reagent	pH	λ_{HR}	λ_{MeR}	$\Delta\lambda$	R:Me	(Fe:Me)
N-MAC	5-6	540	610	70	1:1	Al(1:1); Cu(1:25); Ni(1:80); Cd(1:30); Co(1:70); Cr(1:1); Ga(1:50)
Immobilized N-MAC (IMN-MAC)	3-4	570	690	120	1:1	Al(1:50); Cu(1:100); Ni(1:200); Cr(1:200); Co(1:50); Be(1:500); Mn(1:400); Ga(1:1150)

where: R-reagent, Me-metal

It is shown that reaction of Fe (III)-ions with IMN-MAC are more sensitive and selective in comparation with their interaction with N-MAC in solution. From obtained result it is shown that the elaborated method of Fe (III) determination by IMN-MAC has differed by high selection and reproducing with Sr didn`t exceed 0,18. And also the obtained results have indicated on the based metrological by recommendation of the proposed method for analysis of waters of different nature.

SYNTHESIS AND SUZUKI CROSS-COUPLING OF ISOMERIC N-BOC-PROTECTED BENZIMIDAZOLES

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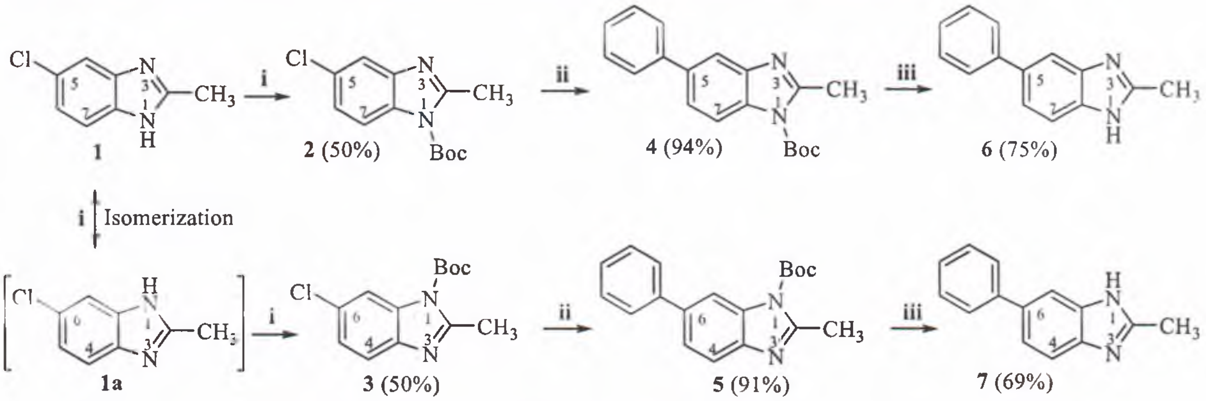
Among heterocyclic pharmacophores, the benzimidazole ring system is quite common and they are often called ‘privileged’ due to their wide recurrence in bioactive compounds [1-4]. During the last decade, significant progress has been made in the field of transition metal catalyzed cleavage and functionalization of inert C–Cl bonds of *non-activated* chloroaromatic compounds. At the same time, Ar-Cl bonds are much stronger and therefore more difficult to activate them than Ar-Br and Ar-I bonds.

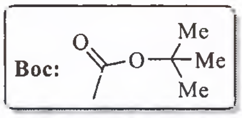
In order to study the cross-coupling of chlorine derivatives of heterocyclic compounds, we chose 5-chloro-2-methyl-1H-benzo[d]imidazole (**1**) with a free secondary amino group and a passive C-Cl bond. The reaction of **1** with phenylboronic acid was carried out in the presence of palladium acetate, sodium or potassium carbonates, as well as in the presence and / or absence of a ligand

(XantPhos or TBAB) in different ratios of the starting reagents. However, in all the above conditions, the cross-coupling reaction was not successful.

Therefore, we decided to protect of the free N-H group of **1**. Protection of this group using di-*tert*-butyl dicarbonate in a strongly basic medium (**i**). It is known that this reagent is widely used to introduce a *tert*-butoxycarbonyl (Boc) protecting group into amines. This group can be removed (deprotected) in an acidic medium (usually removal by trifluoroacetic acid) or by heating. Such a defense strategy has found application not only in the synthesis of peptides, but has also been extended to the synthesis of carbohydrates and alkaloids. Protection of the N-H group is carried out in the presence of bases - diisopropylethylamine (DIPEA) and dimethylaminopyridine (DMAP) with di-*tert*-butyl dicarbonate (2 equiv.) by reflux for 3 h. At the same time, contrary to expectations, isomeric N-Boc protected derivatives - *tert*-butyl 5-chloro-2-methyl-1H-benzo[d]imidazole-1-carboxylate (**1**) and *tert*-butyl 6-chloro-2-methyl-1H-benzo[d]imidazole-1-carboxylate (**1a**) in 1:1 ratios (a conversion of the starting reagents are 100%) were formed in a quantitative yield. The structure of N-Boc protected derivatives (**2, 3**) has been completely proved on the basis of IR-, ^{1}H NMR-spectroscopy and mass-spectrometry:



i: Boc_2O (2 equiv.), DIPEA, DMAP, DCM, reflux, 3 h; **ii:** $Pd(OAc)_2$ (4.5 mol%), $Ph\text{-}B(OH)_2$ (1.25 equiv.), Dicyclohexyl(2-biphenyl)phosphine (9 mol %), K_3PO_4 (1.23 mmol), 1,4-Dioxane (abs.), reflux, 9 h;
iii: Na_2CO_3 (1.2 equiv.), DME/H_2O - 5/2, reflux, 16 h.



Further, the interaction of compounds **2** and **3** with phenylboronic acid in the presence of a ligand - dicyclohexyl(2-biphenyl)phosphine, $Pd(OAc)_2$ catalyst and a strong base (K_3PO_4) by reflux in absolute dioxane for 9 h (**ii**) was studied and the corresponding N-Boc protected cross-coupling products - *tert*-butyl 2-methyl-5-phenyl-1H-benzo[d]imidazole-1-carboxylate (**4**) and *tert*-butyl 2-methyl-6-phenyl-1H-benzo[d]imidazole-1-carboxylate (**5**) are obtained in excellent yields. The protective (Boc) group is removed in an alkaline medium in a mixture of dimethoxyethane-water (5:2) solvents by reflux for 16 h (**iii**). As a result of the reaction, the obtained desired products of cross-coupling - 2-methyl-5-phenyl-1H-benzo[d]imidazole (**6**) and 2-methyl-6-phenyl-1H-benzo[d]imidazole (**7**) in good yields.

This method will open wide opportunities for obtaining new aryl-aryl, aryl-heteryl and heteryl-heteryl conjugates, which are promising compounds from the point of view of theoretical and applied organic chemistry.

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OBTAINING AN ECOLOGICALLY PURE BIOPOLYMER CARBOXYMETHYL CHITOSAN FROM APIS MELLIFERA

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In the development of new technologies, research is of particular value, which makes it possible to widely change and regulate the properties of materials based on chitosan, taking into account the effect of the particle size of both the initial and the final product on their composition, structure, and properties. Chitosan biopolymer is a product of chitin deacetylation and is the most well-known and studied water-soluble derivative of it. In terms of prevalence, it is second only to cellulose and is reproduced in nature from completely renewable natural raw materials. It is a part of the supporting tissues and the external skeleton of arthropods (crustaceans, arachnids), insects, algae, where it is in a complex with mineral salts. In addition to these properties, a biodegradable polymer, chitosan, is an environmentally friendly product [1]. Chitosan is used in medicine, in agriculture, in the textile industry for dyeing and printing fabrics [2]. The most accessible for industrial development of chitin production in the Republic of Uzbekistan is the mulberry nutworm. Chitosan is obtained from the pupae of the Bombyxmori silkworm. Recently, we obtained chitosan from the dead bees ApisMellifera and determined the chemical composition of the natural dry dead bees. Podmore bee contains a