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NMO/H_2O system as a new medium for nucleophilic substitution reactions

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In the literature, N-methyl-N-oxide is known not only as a solvent for cellulose but also widely used in organic synthesis, in particular as a co-catalyst in oxidation processes but as a medium for nucleophilic substitution reactions it was previously unknown. In 2015, it was shown for the first time that in the NMO/H_2O system in the presence of bases; azoles can easily be alkylated with various alkyl halides. Subsequently, in our paper, it was shown that with the aid of the above described system it is possible to successfully carry out the dehydrochlorination of chloroethyl azoles, which leads to the formation of vinylpyrazoles. This method has allowed avoiding the conduct of dehydrochlorination in an alcoholic medium. Subsequently, in the above described system, allylation of multifunctional nucleophiles, in particular phenol and monoethanolamine with various allylic halides, was carried out and it was shown that the NMO/H_2O system is an effective method for alkylation compared with interphase catalysis. The NMO/H_2O system can also be used in hydrolysis reactions. The hydrolysis of 1,3-dichlorobutene in this system was studied and it was shown that the hydrolysis product undergoes alkylation and results in the formation of unsaturated ethers. Synthesis of similar ethers is described in the literature in much more complicated ways.

Biography

Hasratyan Ani has received her Master's degree from Chemical Faculty of Yerevan State University in 2013 under supervision of T Ghochikyan. She received her PhD in 2017 under supervision of Dr. M Sargsyan. During her scientific work, she has done a lot of experiments and has 24 published articles. Her research interest is in NMO/H_2O system and its chemical properties in applied organic synthesis. She participated at 4th International Conference of Young Scientists "Chemistry Today-2014", Yerevan, Armenia, 18-22, 2014 and IV Scientific Conference of the Armenian Chemical Society "Achievements and Problems", October, 7-11, 2014, p-158, Yerevan-Vanadzor.

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