

MICHAEL REACTION CATALYZED
BY TETRAMETHYLAMMONIUM FLUORIDE
ON SILICA GEL

A. D. Karpyuk and I. P. Beletskaya

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Deposition of tetramethylammonium fluoride (TMAF) on silica gel creates a nonhygroscopic source of fluoride ion, which can be used for the generation of carbanions from compounds containing a labile hydrogen atom [1]. Taking as an example the reactions of nitromethane and thiophenol with α -enones, a possibility was shown of using this method for carrying out the Michael reaction [1]. We extended this reaction to different CH acids with pK_a from 8 to 23 [2]. The reactions were carried out at 50°C, and the solvent was DMFA. In all cases, except for fluorene, the yields of the reaction products are not inferior to those shown in [3], and the time of reaction is shortened to 1-2 h. In the case of fluorene, after holding the reaction mixture for 3 h, the yield of the product was 40% (in the reaction catalyzed by EtONa, the yield was quantitative [3]).

Below, CH-acids and yields, %, of products of their addition to chalcone are given: CH_3NO_2 , 84; $CH_2(CN)_2$, 92; $CH_2(COOEt)_2$, 92; $CH_2(CN)COOEt$, 92; $(CH_2)_4CO$, 78; $(CH_2)_5CO$, 82; fluorene, 41; $PhCH(COOEt)_2$, 92. The yield of the product of addition of CH_3NO_2 to benzylideneacetone was 84%. All the compounds obtained had melting points corresponding to those given in the literature.

LITERATURE CITED

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3. É. D. Bergmann, D. Ginzburg, and R. Pappo, Organic Reactions [Russian translation], Vol. 10 (1963), p. 301.