eISSN: 2229-3213 pISSN: 2229-3205
The Journal of Applied Science and Social Science
Volume 16,Issue 02 February, 2026

SYNTHESIS AND IR SPECTRUM ANALYSIS OF 2,5-DIMETHYL BENZYL ESTERS OF ACRYLIC AND METHACRYLIC ACIDS

Sabirova Diloram Kabulovna
Associate Professor, Department of "Natural Sciences",
Tashkent State Transport University
Ergasheva Xikoyat Turabovna
Teaching assistant, Department of "Natural Sciences",
Tashkent State Transport University
Kholmominov Farrukh Kochkor ugli
Teaching assistant, Department of "Natural Sciences",
Tashkent State Transport University

2,5- dimethyl benzyl acrylate and 2,5- dimethyl benzyl methacrylate's synthesis and etherification method using noticeable result failure to give because of remaining complicated broadcasts such as new nucleophile exchange with synthesis This was done. reaction for acrylate and methacrylate's benzyl chloride with DMF using 2, 4, 6 - hours' time during held seen. Table 1 below shows 2,5-dimethyl benzyl acrylate and methacrylate's harvest to be reaction fruits was brought.

Table 1

Mole ratios of regents.		**Reaction duration time**	**Time according to taken of products reaction fruit**	
Sodium acrylate , 2.5 dimethyl benzyl chloride , DFA, hydroquinone	**Sodium methacrylate, 2.5 dimethyl benzyl chloride, DFA, hydroquinone**		**2,5-dimethyl benzyl acrylate**	**2,5- dimethyl benzyl methacrylate**
1:1:8:0.01	1:1:8:0.01	2 hours	64 %	62 %
1:1:8:0.01	1:1:8:0.01	4 hours	71 %	73 %
1:1:8:0.01	1:1:8:0.01	6 hours	80%	79 %

that's why with together reaction from the product one is 2-5-dimethyl benzyl methacrylate IR spectrum taken and analysis was done.

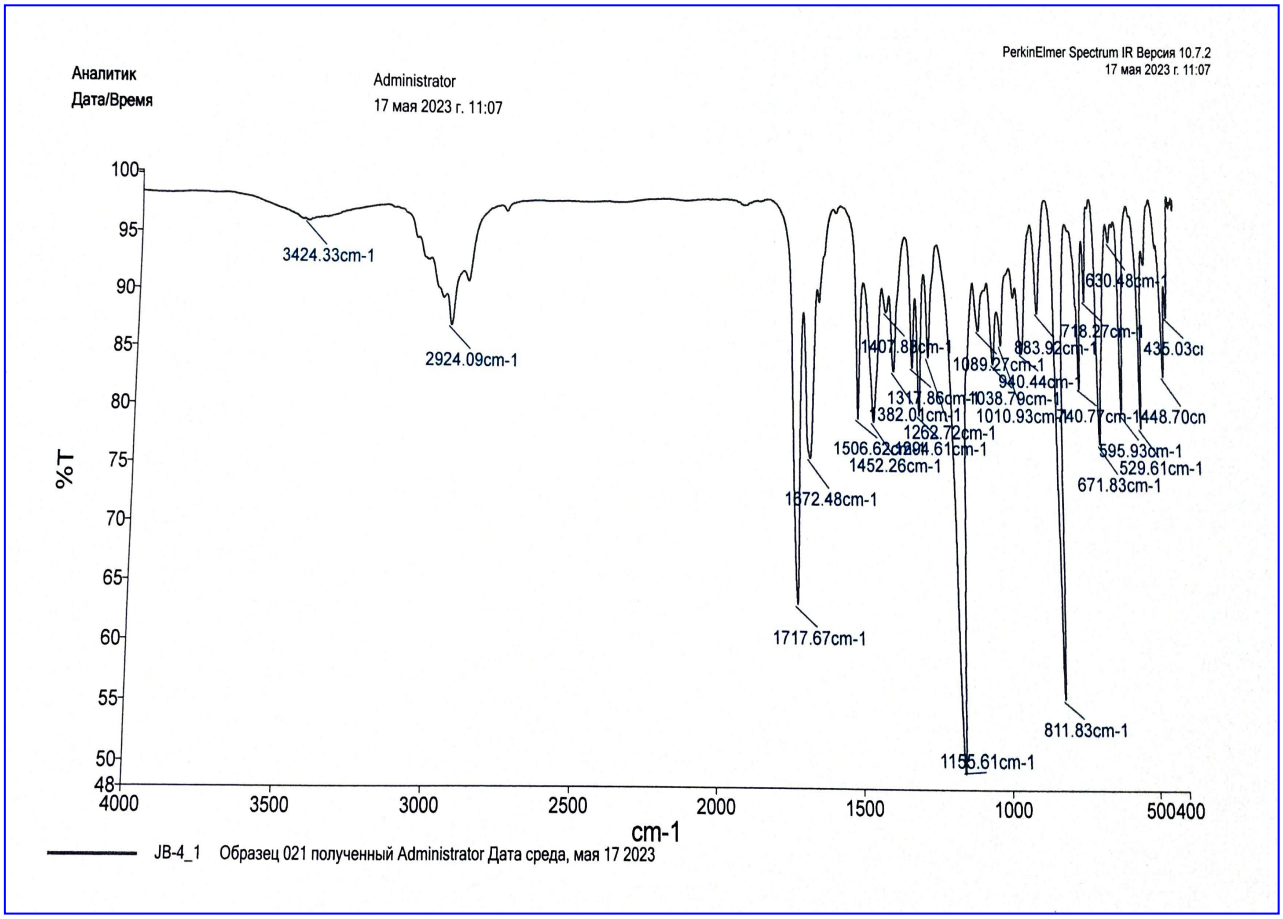

Figure 1. 2,5-dimethyl benzyl methacrylate IQ spectrum.

Received spectrum results analysis this shows that in the region of 2924 cm $^{-1}$ methacrylate The C=C bond in the compound, and the C=O bond is in the region of 1717.67 cm $^{-1}$ and in the area of 3424.33 cm $^{-1}$ aromatic C in the ring and to him/her connected methyl radical C between to the garden relevant the alarm the winning sees possible. From this outside approximately in the region of 3030-3080 cm $^{-1}$ weak aromatic to the ring relevant light absorption has also been observed. This information 2,5-dimethyl benzyl methacrylate synthesis successful done increased shows. In the IR spectrum visible it is so complicated ether in the content valence vibrations of the carbonyl C=O group relevant absorption The lines are in the range of 1715.86 cm $^{-1}$ ^{of} the IR spectrum. This vibration is observed. corresponding signal intensity in the IR spectrum other absorption from the lines big will be. Other to the gardens than the valence vibration of the C=O bond frequency collar visible standing the alarm wallet Benzyl radical in the content aromatic of the ring light absorption valence vibration in the region of 3034.68 cm $^{-1}$ harvest that he did our vision possible. Acrylic radical the C=C bond in the composition is in the region of 2968.86 cm $^{-1}$ of the IR spectrum. light absorption observed.

In the region of 2891 cm $^{-1}$, sp ^{3} hybridized C-H bond was observed. even though it gave a small signal, our passage possible. In the IR spectrum taken information with benzyl acrylate harvest We were convinced that it was.

References

1. Neumeyer M., Brückner R. Nonracemic g -Lactones from the Sharpless Asymmetric Dihydroxylation of β, g -Unsaturated Carboxylic Esters //European Journal of Organic Chemistry. - 2016. - T. 2016. – no. 30. - S. 5060-5087.

2. Dai L. et al. r - Difluoroalkylation: Synthesis of r - difluoroalkyl -α, β- unsaturated esters via photoredox NHC-catalyzed radical reaction //Organic Letters. - 2020. - T. 22. – no. 20. - S. 8173-8177.

3. Carlsson M. et al. Study of the sequential conversion of citric to itaconic to methacrylic acid in near-critical and supercritical water //Industrial & engineering chemistry research. - 1994. - T. 33. – no. 8. - S. 1989-1996.

4. Burkart MD et al. Opportunities and challenges for catalysis in carbon dioxide utilization //ACS Catalysis. - 2019. - T. 9. – no. 9. - S. 7937-7956.