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TO'PLAMI



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SYNTHESIS AND CHEMICAL PROPERTIES OF 4,4,4-TRIFLUORO-1-(P-TOLYL)-1,3-BUTANEDIONE

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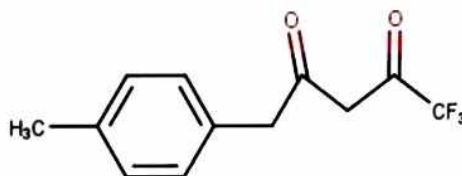
Today, researchers are paying special attention to dicarbonyl compounds containing fluorine substituents and their derivatives, because the practical use of such compounds is determined by their important properties. The presence of a fluorine atom in the molecule and high extraction ability allow them to be used as chelating reagents in gas-liquid spectrophotometric chromatography and fluorescent analysis. Complexes of fluorinated β -dicarbonyl compounds with lanthanoids (mainly europium and praseodymium) are widely used as "shifting" reagents in NMR spectroscopy [1,2].

To a solution of ethyl trifluoroacetate (6.32 g, 44.5 mmol) and 28% sodium methoxide-methanol solution (9.4 g, 49 mmol) in tert-butylmethyl ether (10 mL) was added 4-acetylpyridine (16, added. 4.90 g, 40.4 mmol) was added to tert-butyl methyl ether (20 mL) at room temperature and the mixture was stirred for 22 hours [3].

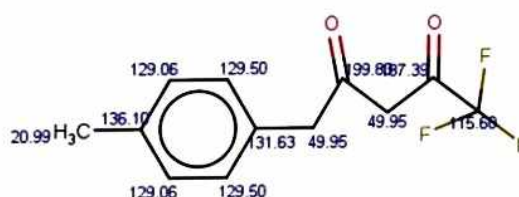
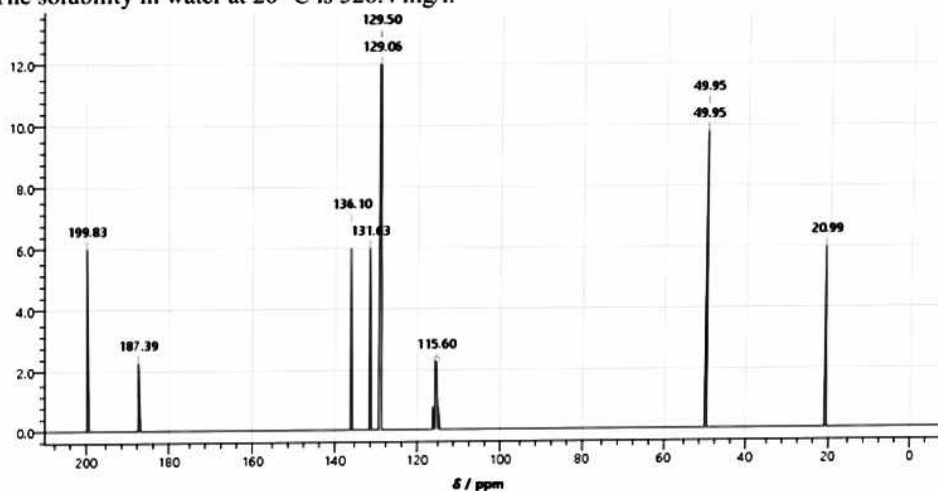
A 10% aqueous solution of citric acid was added until the reaction solution reached pH 4. The precipitate was collected by filtration, washed with water and dried to give 4,4,4-trifluoro-1-(p-tolyl)-1,3-butanedione (5.46 g, 62%) is formed.

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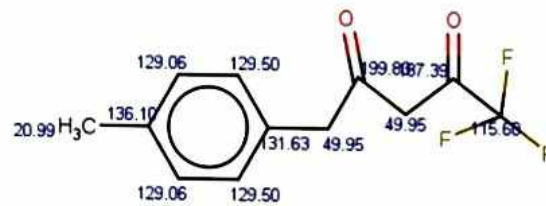
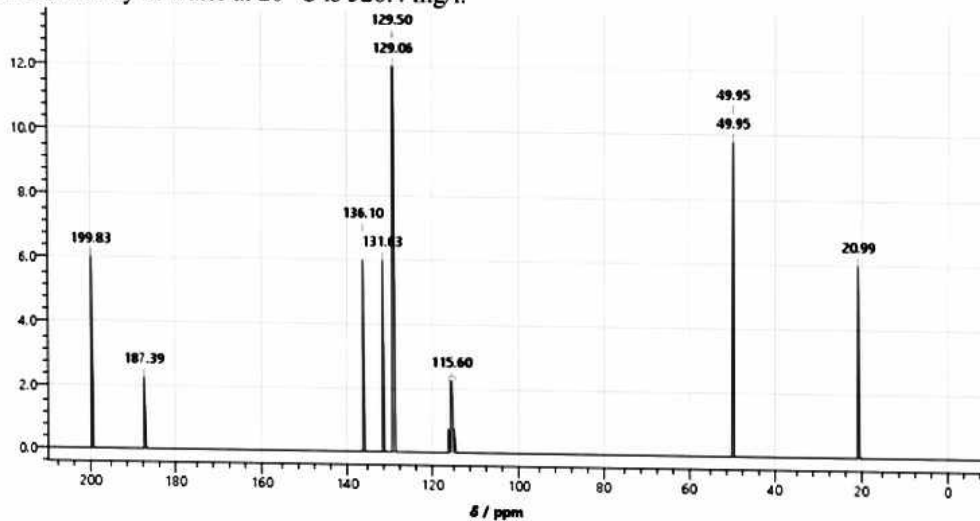
2024 yil 22 may "Kimyo ta'limi, fan va ishlab chiqarish integratsiyalari", Qo'qon davlat pedagogika instituti



The resulting substance is slightly soluble in chloroform and slightly soluble in methanol. The solubility in water at 20 °C is 526.4 mg/l.

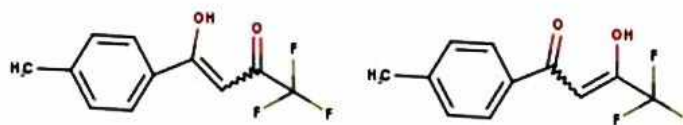


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Atom numbers	Chemical shift	Net intensity	Multiplet information	Quality
7	20.99 ppm	1	s	good
8	49.95 ppm	1	s	medium
10	49.95 ppm	1	s	rough
15	115.60 ppm	1	q	medium
2, 6	129.06 ppm	2	s	good
3, 5	129.50 ppm	2	s	medium
4	131.63 ppm	1	s	medium
1	136.10 ppm	1	s	good
11	187.39 ppm	1	q	good
9	199.83 ppm	1	s	good

4,4,4-trifluoro-1-(p-tolyl)-1,3-butanedione has two different tautomeric forms. The productivity of both of them is 66% and 34%, respectively.



References

1. Kobrakov K.I., Parpiyev N.A., Umarov B.B., Avezov Q.G., Tursunov M.A., Ftorli β -diketonlar atsilgidrazonlari kompleks birikmalarining katalitik xossalari., Buxoro davlat universiteti ilmiy axboroti., 2012/4(48)
2. Tursunov, M. A., B. B. Umarov, and K. G. Avezov. "Synthesis and Crystal Structure of Nickel (II) and Zinc (II) Complexes with Benzoylacetic Aldehyde Derivatives." Moscow university chemistry bulletin 74.3 (2019): 138- 142.
3. https://www.chemicalbook.com/ChemicalProductProperty_EN_CB4148676.htm