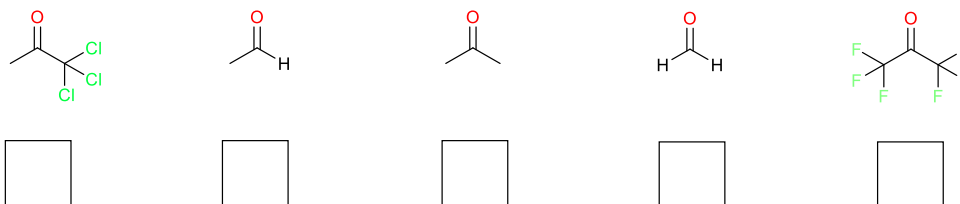
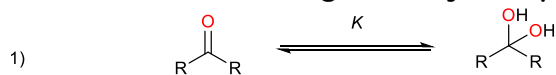


1. Rank the following carbonyl compounds in order of least to most likely to hydrate in water.



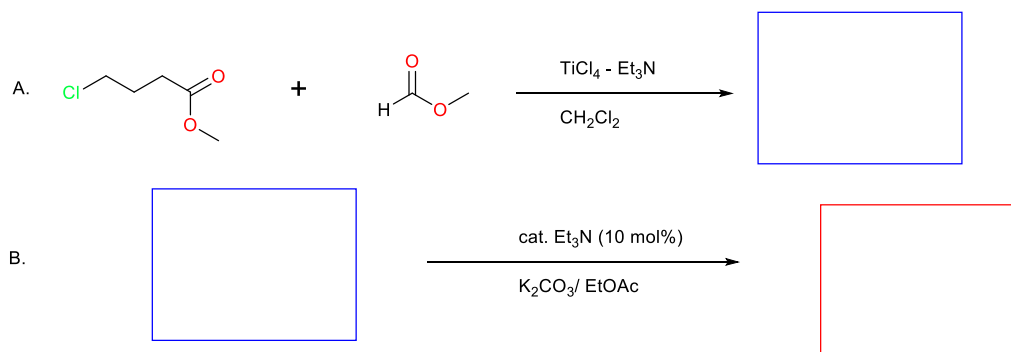
2. Draw the intermediate (blue), product (red) and mechanism of the following two transformations from ...

Synthesis of Methyl 1-Formylcyclopropanecarboxylate utilizing Ti-Claisen Condensation

Yuichiro Ashida, Satomi Kajimoto, Hidefumi Nakatsuji, and Yoo Tanabe

Org. Synth. **2016**, *93*, 286

DOI: 10.15227/orgsyn.093.0286



3. Write the product and draw the mechanism of the following reaction from...

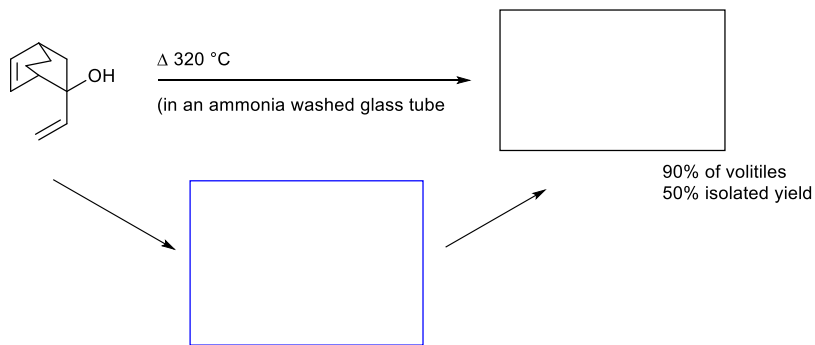
A Synthesis of Ketones by the Thermal Isomerization of 3-Hydroxy-1,5-hexadienes. The Oxy-Cope Rearrangement

[Jerome A. Berson](#), [Maitland. Jones](#)

J. Am. Chem. Soc., **1964**, *86* (22), pp 5019–5020

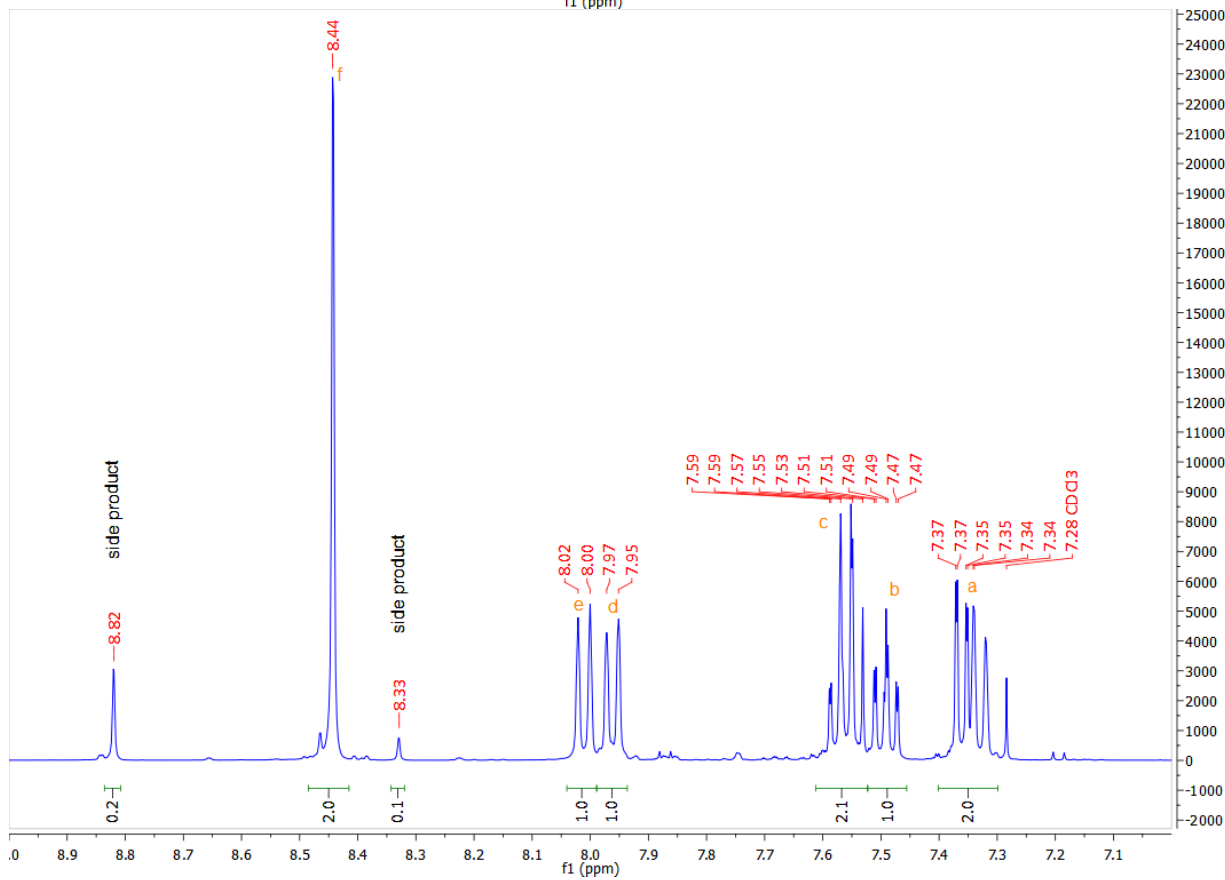
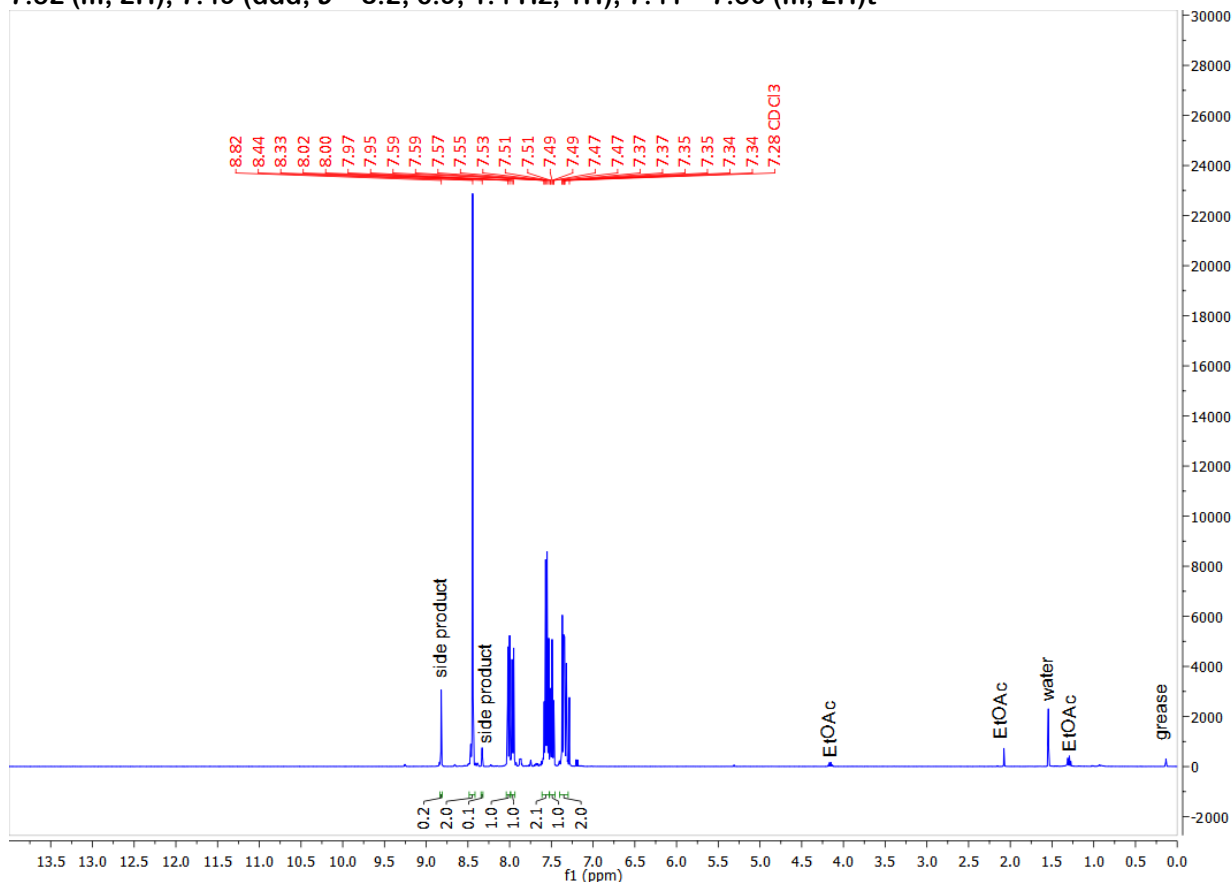
DOI: 10.1021/ja01076a067

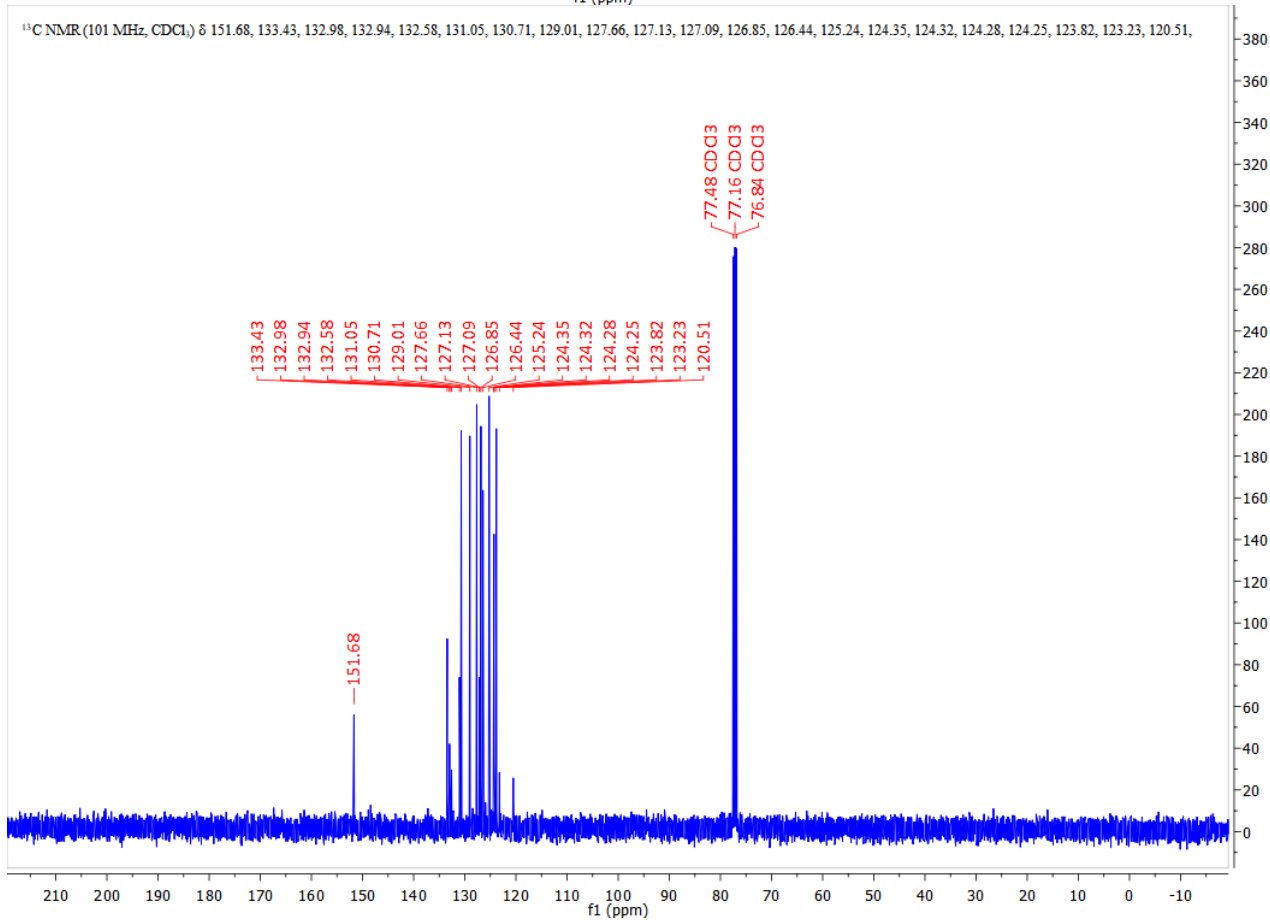
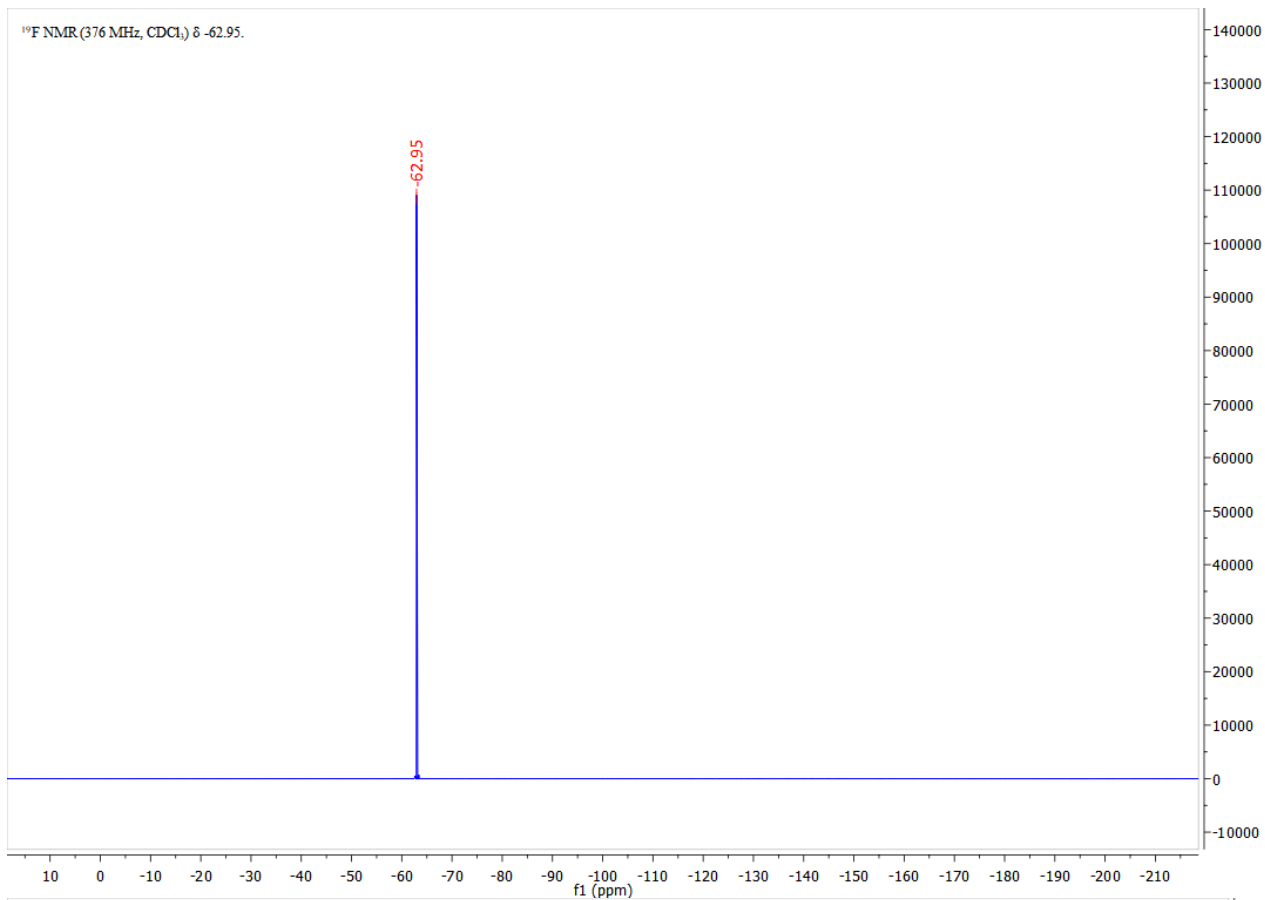
Publication Date: November 1964

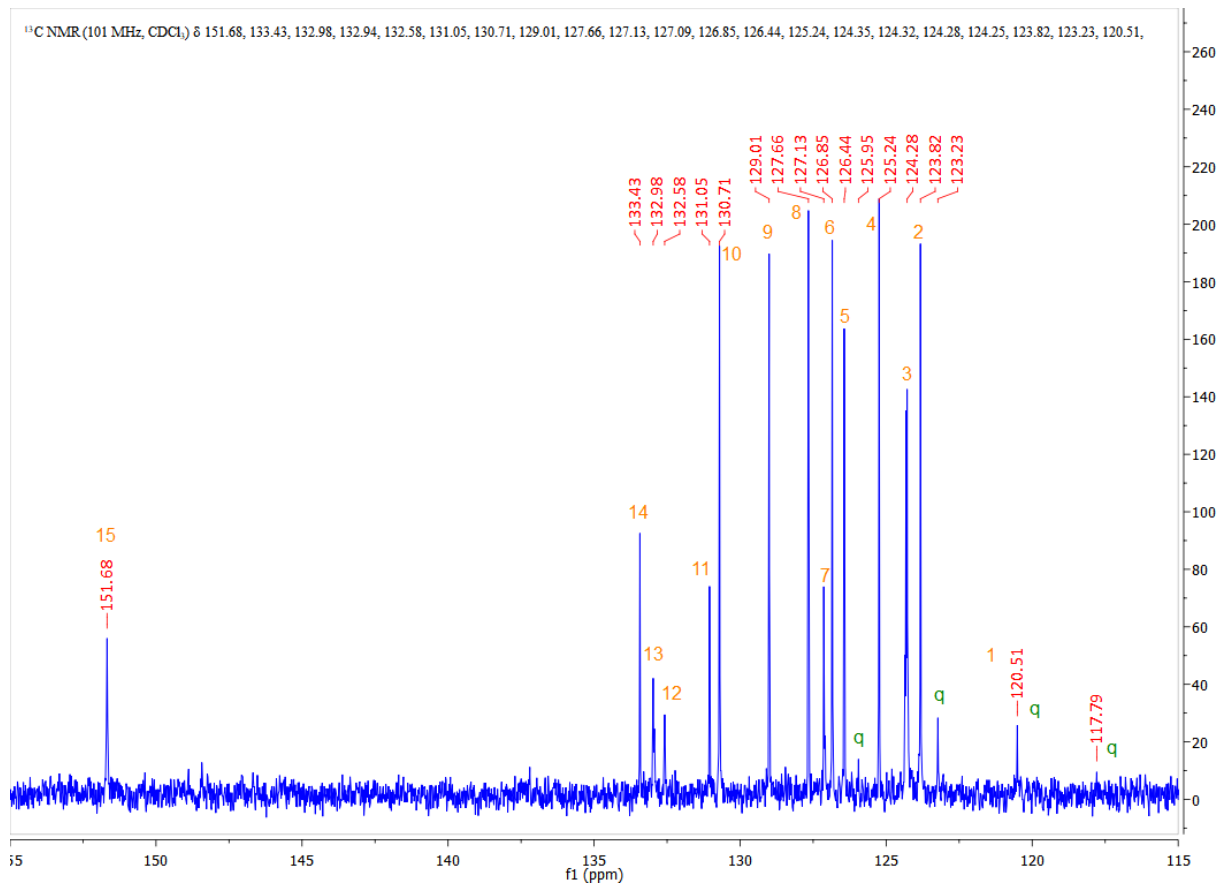


4. Solve and assign resonances to a structure which is consistent with a formula of $C_{17}H_9F_3N_2O_4$ and the following Spectral Data ...

1H NMR (400 MHz, Chloroform-*d*) δ 8.44 (s, 2H), 8.01 (dt, $J = 8.5, 1.0$ Hz, 1H), 7.96 (dt, $J = 8.2, 1.0$ Hz, 1H), 7.63 – 7.52 (m, 2H), 7.49 (ddd, $J = 8.2, 6.9, 1.4$ Hz, 1H), 7.41 – 7.30 (m, 2H)







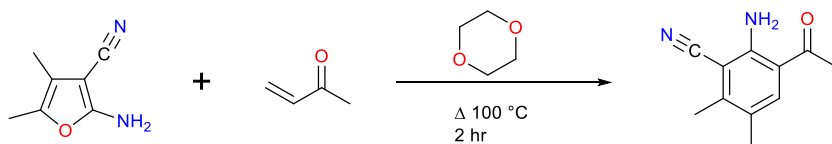
5. Propose a reasonable mechanism for the following transformation...

From 2-Amino-3-cyanofurans as Precursors for Anthranilic Acid Derivatives

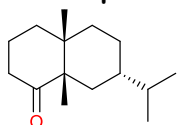
W. J. Nixon, Jr., J. T. Garland, C. Dewitt Blanton, Jr.

Synthesis 1980; 1980(1): 56-58

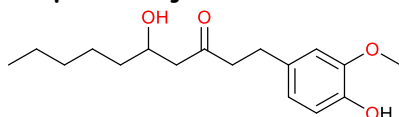
DOI: 10.1055/s-1980-28925



6. Propose a retrosynthetic analysis for Valeranone



7. Propose a synthesis for 6-Gingerol (the flavoring responsible for ginger)



Natural Flavors and Fragrances: Chemistry, Analysis, and Production

Carl Frey

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Chapter 1, pp 3–19

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