Synthesis of Dibenzalacetone

**Summary:** We will use an aldol reaction to synthesize dibenzalacetone or a related compound. The UV-VIS spectrum will be measured to see the relationship between the extent of conjugation in the molecule and its spectrum.

![Chemical structure](image)

**Reading:** Background - Read sections in text on: Aldol, UV-vis spectra and conjugation

**General Procedure:**
Mix 20 mL ethanol with 15 mL 10% aqueous NaOH and cool in an icebath. In a test tube mix 2.1 g (2.0 mL) benzaldehyde and 0.6 g (748 μL) acetone. Add the benzaldehyde/acetone mixture to the sodium hydroxide solution in small portions over 5-10 minutes. Stir for 30 minutes. Cool in an ice bath, then vacuum filter. Suspend the crystals in 50 mL water and filter again. Check the filtrate with litmus paper, if still basic (blue) repeat washing until no longer basic.

Recrystallize product from a minimum amount of hot ethanol. Filter, dry, weigh, measure melting point and calculate percent yield.

Dissolve a small amount of product in ethyl acetate and measure the UV-VIS spectrum, record the λ_max.

**Before Lab:**
write this experiment up in your lab notebook!

**Notebook Format:**
Add Dibenzalacetone Experiment to the Table of Contents.

In advance, write-up the following in your lab notebook:

At the top of the page: Your Name, course, professor, date of work, title of experiment.

write the balanced chemical equation and relevant physical constants below each compound

include the following sections in your lab notebook:

**Purpose:** what do you think is the reason for doing this lab?

**Safety Concerns:**
**Procedure:**
1. Show this notebook to Steve.
2. procedure for lab ....

**Data:**
During lab, make a table for the physical data and record the values and sources

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**Synthesis of Dibenzalacetone**
Aldol Lab Report

**Procedure:**
give reference to the handout

**Results:**
make a table of all data measured,
calculate percent yield and show your calculations

**Error Analysis:**
discuss any special problems you had including possible causes and solutions
discuss the purity and yield of the final product - evaluate, and suggest possible explanations for low yield / poor purity

**Post Lab Questions:**

Define λmax and molar absorptivity.

Look up and record the λmax values for your starting materials, record the source of this information.

How does the λmax of your product compare with the starting materials? Explain this difference.

Solve problem on the web at:
http://webserv.sienahts.edu/~swathen/organic/molecules/db-acetone.html

Include the structures of the three isomers, drawn with IsisDraw, in your report.