Chemical Literature Assignment (10 pts)

Instructions: All areas must be TYPED into the appropriate boxes. Boxes can be resized, but you MUST select the appropriate sections for each question on Gradescope in order for it to be graded. Hand-written answers will not be graded. Use proper citation format for all citations. See the Library Course Guide for details.

Scientists at all levels must be adept at searching the literature in their fields. A chemist might search the literature to find specific properties of a compound, to determine the best way to set up a reaction or to purify a compound, to find the biological activity of a compound, etc. As in all fields, when you reference published work, proper citation format is extremely important. This exercise will expose you to a few common references and databases you will be using in this course and future chemistry courses. There are several resources in this module on Canvas that will help you complete this assignment, including the Library Course Guide. Note that most of the information you are finding here will be required for your prelab prep for Experiment 1.

1. Use the *Knovel Critical Tables* from the *Knovel* on-line database to obtain the requested information. *Only use the 'Basic Physical Properties of Chemical Compounds' table*. After you type in the CAS number, you can add the word "basic" to help call up this table more quickly. If the information isn't available in this reference, you can indicate that by typing N/A. (2.5 pts)

***Cite* the reference:**

65-85-0. Basic Physical Properties of Chemical Compound, In *Knovel Critical Tables* [Online], 2nd ed.; Knovel Corporation, 2008.; from https://app.knovel.com/hotlink/itble/rcid:kpKCTE000X/id:kt002VLXT1/knovel-critical-tables/basic-physical-properties (accessed January 26, 2024)

86-73-7. Basic Physical Properties of Chemical Compound, In *Knovel Critical Tables* [Online], 2nd ed.; Knovel Corporation, 2008.; from https://app.knovel.com/hotlink/itble/rcid:kpKCTE000X/id:kt002VLXT1/knovel-critical-tables/basic-physical-properties (accessed January 26, 2024)

CAS-RN	Row No.	Substance Name (no synonyms)	Structure Available (yes or no)	Density, include units	Melting Point, °C

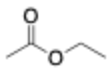
65-85-0	1700	benzoic acid	yes	1.316 g/cm^3	121.4 – 123
86-73-7	10834	fluorene	yes	N/A	111.9 – 117.9

2. Perform an 'exact structure search' using *CRC online* to obtain the requested information. *Only use the "Physical Constants of Organic Compounds" table*. To get to the exact structure search feature, click the flask icon in the top right. Make sure the search is an "Exact" search ad not a "substructure" search. (2.5 pts)

***Cite* the reference:**

141-78-6 . Physical Constants of Organic Compounds. In *CRC Handbook of Chemistry and Physics* [Online], 104th ed; Haynes, W. M., Ed.; CRC Press, 2023. https://hbcp.chemnetbase.com/contents/InteractiveTable.xhtml?dswid=2740 (accessed January 28, 2024)

109-66-0 . Physical Constants of Organic Compounds. In *CRC Handbook of Chemistry and Physics* [Online], 104th ed; Haynes, W. M., Ed.; CRC Press, 2023. https://hbcp.chemnetbase.com/contents/InteractiveTable.xhtml?dswid=2740 (accessed January 28, 2024)

Structure	**CAS-RN**	**Row**	**Physical Form**	**Density@T(°C), include units**	**Miscibility in Ethanol (EtOH)** (do not use an abbreviation)
	141-78-6	4873	Liquid	0.9006 g/cm^3	miscible
	109-66-0	8629	Liquid	0.6262g cm^-3	miscible

3. Using the *Merck Index online*, click on "Advanced search" and enter the CAS-RNs below to obtain the requested information. (2.5 pts)

***Cite* the reference:**

121-33-5. The Merck Index Online; Royal Society of Chemistry, 2024; M11390. https://merckindex-rsc-org.revproxy.brown.edu/monographs/m11390(accessed January 28, 2024)

Structure	Name (under "title")	Melting Point, °C	Non-medical use	Solubility in ethanol
121-33-5	Vanillin	81-83 °C	Pharmaceutic aid (flavor). As a flavoring agent in confectionery, beverages, foods and animal feeds. Fragance and flavor in cosmetics.	1:2 vanillin:ethanol

			Reagent for synthesis.	
141-82-2	Malonic Acid	135 °C	In manuf of barbiturates.	about 2 ml alcohol, 1.1 ml methanol, 3 ml propyl alcohol

4. Complete the data for CAS-RN 614-47-1 using the 3 different Handbooks. Follow the guidelines given for the tables to use for each Handbook in the previous exercises. Include units as needed. If a reference source does not have the data, write N/A in the column. If a reference source does not have the complete information, write all that is available. DO NOT assume information! (2.5 pts)

Handbook	**Name**	**Melting point, °C**	**Physical form**	**Solubility**

Knovel Critical Tables	trans-chalcone	55 – 59	N/A	N/A
Merck Index	Chalcone trans-Chalcone	56-57	N/A	Pale yellow crystals from alcohol
CRC	trans-1,3-Diphenyl-2-propen-1-one	56	pa ye lf, pr, nd (peth)	i H2O; sl EtOH; s eth, bz, chl, CS2