

CH 221 Fall 2021:

“Empirical Formula”

(online) Lab - Instructions

Note: **This is the lab for section W1 of CH 221 only.**

- *If you are taking section 01 or section H1 of CH 221, please use this link:*
<http://mhchem.org/s/4a.htm>
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Step One:

Watch the lab video for the “Empirical Formula” lab, found here:

<http://mhchem.org/w/4.htm>

There is no data to record from the video for this lab.

Step Two:

Complete pages I-4-2 through I-4-4 using the “Empirical Formula” video and your lecture notes. Include your name on page I-4-2!

Step Three:

Submit your lab (pages I-4-2 through I-4-4 *only* to avoid a point penalty) **as a single PDF file to the instructor via email (mike.russell@mhcc.edu) by Wednesday, October 20 by 11:59 PM.** I recommend a free program (ex: CamScanner, <https://camscanner.com>) or a website (ex: CombinePDF, <https://combinepdf.com>) to convert your work to a PDF file.

If you have any questions regarding this assignment, please email (mike.russell@mhcc.edu) the instructor! Good luck on this assignment!

Name:

This lab will provide practice regarding the determination of an empirical formula. This assignment is due **Wednesday, October 20 at 11:59 PM via email**. *Show all work* and circle final answers to receive credit.

1. A student carefully measures 1.250 g of an unknown blue copper chloride into a beaker which contains a piece of zinc metal, and the blue color of the copper chloride disappears. Upon isolation and drying, the student measures 0.800 g of pure copper metal. Use this information to calculate the moles of Cu, the grams and moles of Cl and the empirical formula of the copper chloride.

mass of chlorine (g): _____ moles of chlorine (mol): _____

moles of copper (mol): _____ Empirical formula: _____

Name of copper chloride: _____

2. Carlos Chromium reacted 0.672 g of iron with oxygen from the air. The final product weighed 0.961 g. Determine the empirical formula of the iron oxide product. What is the **name** of the iron oxide?

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3. Determine the %Cl by mass value to at least four significant figures for copper(II) chloride.

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4. The bacterial fermentation of grain to produce ethanol forms a gas with a percent composition of 27.29% C and 72.71% O. What is the empirical formula for this gas?

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5. In 2006, a Russian team discovered an interesting molecule they called “sulflower” because of its shape and because it was based on sulfur. It is composed of 57.17% S and 42.83% C and has a molar mass of 448.70 g/mol. Determine the empirical and molecular formulas of “sulflower.”