# STOI 386: Determining the Empirical Formula of Copper Chloride

**Recorded Data:** *(All data should be recorded in pen.)*

1. density Cu\(_x\)Cl\(_y\) soln (g/ml) \(\ldots\) \(1.074\) \(\ldots\)
2. concentration Cu\(_x\)Cl\(_y\) soln (g/ml) \(\ldots\) \(0.08067\) \(\ldots\)

<table>
<thead>
<tr>
<th>Run #1</th>
<th>Run #2</th>
</tr>
</thead>
</table>
3. Mass of empty casserole, g \(\ldots\) \(91.613\) \(\ldots\) \(90.968\) \(\ldots\)
4. Mass of casserole with ~25 ml Cu\(_x\)Cl\(_y\) soln, g \(\ldots\) \(116.800\) \(\ldots\) \(116.979\) \(\ldots\)
5. Mass of ~25 ml Cu\(_x\)Cl\(_y\) soln, g \(\ldots\) \(\ldots\) \(\ldots\)
6. *Volume of ~25 ml Cu\(_x\)Cl\(_y\) soln, ml (V = m/d) \(\ldots\) \(\ldots\) \(\ldots\)
7. *Mass of actual Cu\(_x\)Cl\(_y\) in ~25 ml soln, g \(\ldots\) \(\ldots\) \(\ldots\)
\[
\text{m}_{\text{Actual}} = V \times \text{conc.}
\]

Repeat heating, cooling, and weighing procedure five times or until two successive weighings are within 10mg.

8. Mass of evaporating dish + Cu 1\(^{st}\) heating, g \(\ldots\) \(92.426\) \(\ldots\) \(93.259\) \(\ldots\)
   2\(^{nd}\) heating, g \(\ldots\) \(92.424\) \(\ldots\) \(91.846\) \(\ldots\)
   3\(^{rd}\) heating, g \(\ldots\) \(\ldots\) \(\ldots\) \(91.842\) \(\ldots\)
   4\(^{th}\) heating, g \(\ldots\) \(\ldots\) \(\ldots\) \(\ldots\) \(\ldots\)
   5\(^{th}\) heating, g \(\ldots\) \(\ldots\) \(\ldots\) \(\ldots\) \(\ldots\)

**Calculations (Using equations in lab manual pp 58-59.):**

9. *(Eq. 11) Mass of Cu produced, g \(\ldots\) \(\ldots\) \(\ldots\)
10.* (Eq. 12) Percent Cu in copper chloride, % \(\ldots\) \(\ldots\) \(\ldots\)
11.* (Eq. 13) Mean Percent Cu in copper chloride, % \(\ldots\) \(\ldots\) \(\ldots\)
12. *(Eq. 14) Mass of Cl in copper chloride, g \(\ldots\) \(\ldots\) \(\ldots\)
13. *(Eq. 15) Percent Cl in copper chloride, % \(\ldots\) \(\ldots\) \(\ldots\)
14. *(Eq. 16) Mean Percent Cl in copper chloride, % \(\ldots\) \(\ldots\) \(\ldots\)
15. Empirical Formula of Copper Chloride (Corresponding to Table 2) \(\ldots\) \(\ldots\) \(\ldots\)

*Sample Calculations for equations labeled with an asterisk, *, should be shown on a separate piece of paper. Calculations may be completed for Run #1 only, except for the mean percent of copper in the copper chloride which will incorporate both Run #1 & Run #2.