# ALR AFTER LABORATORY REPORT INSTRUCTIONS

The following are instructions on how write the ALR report to resolve any confusion that you may have. Also detailed instructions are given in lab manual Appendix A.

*** You need to submit paper **ALR After Laboratory Report**: The report is to be inspected by the TA at the start of each lab session. Then the completed ALR will be collected from you for grading at the start of your next lab session. Except for experiment E5 it might be due immediately at the end of your lab session. For experiment E4 you need to prepare 2 separate ALR reports for each E4(I) & E4(II) but both experiments are on kinetics will be done during the same lab session.

*** You need to include all the parts of the **ALR** report that some you handwrite and some you can type or as combination as instructed below.

*** All title of topics must start at a separate line merged on left and in bold CAPITAL letters.

*** Instructions on the **ORAL EXPERIMENTAL DISCUSSIONS** for each experiment (during the lab), instructions on assignments on how to prepare the **FINAL PPT** on a select experiment from **E1-E5**, and the **FINAL REPORT on Ca-ANALYSIS** in commercial products are shown on **CANVAS/FILES/EXPTL-DISCUS FINAL-PPT&CaRPRT INSTR.**

The following is the more detailed instructions on how to write the ALR report. (The contents are based on previous VC211 TA-s experience). It is not recommended to give you an example or sample of the ALR report so not to limit your creativity and authenticity of your lab work. Details for each part of the following can also be found in the lab manual posted on Canvas (Appendix A, p12-to end).

Each student must write individual ALR lab report for each experiment that contains the following:

1. **(new page) Cover Page:** 1 page only

   - Separate lines all centered: Experiment exact title (bold & large letters), student name (Pinyin & Chinese if known), student ID, Section#, Group#, Group names (Pinyin & Chinese), Date, Telephone, email address, then type near the bottom: University of Michigan – Shanghai Jiao Tong University Joint Institute (UM-SJTU JI)

2. **(new page) Summary of Objective, Background, Introduction, Theory, etc.: (typed or handwritten but topics separated by a spaced line and their titles highlighted).**

   - Prof. Hamade says within 2 pages.
   - There are some differences and overlapped contents. Name and arrange them as you like.

- Graphs and Figures preferred (e.g. titration curve)
- Can use Wiki or other sources. Cite.
- Use your own words so you do not violate copyrights.

3. **(new page) Procedure:** Must be handwritten and copied exactly from the manual for each experiment. But no need to draw or handwrite the diagrams (figures) or extensive tables or exhausted repeated procedures from the laboratory manual procedure such as those given in experiment E5 procedure (those you can print exactly as shown by the manual). Sorry, this may be the nightmare and longest part of the report but it is to ensure that you read and hope that you comprehend and can remember procedure so you can save time, efforts and minimize errors and waste of chemicals during the lab work. So, you must handwrite the procedure that will be directly followed during the lab session.

4. **(new page) PLE (PRE-LABORATORY EXERCISES):** Print directly from the manual and answer questions before you enter the lab or you will receive 0 points for this part. Can be combination of typed and handwritten.

5. **(new page) PLQ (POST LABORATORY EXERCISES):** Print directly from the manual and answer questions that you can do before the lab or during the lab sessions. Some questions may need further time to complete after the lab session. You can also add more spaces if needed or attach no more than 1 additional paper to it. Can be combination of typed and handwritten.
   - Data recording should not have correction fluid. Cancelled data should be only crossed with a line and then write corrections above it or below it (this way you can track changes and compare crossed data with new data).

6. **(new page) Calculation/Analysis/Data Processing:** Can be combination of typed and handwritten. Add blank pages as needed so you can complete this part during the lab session. Some parts need further time so you can complete after the lab session.

   - Important
   - This part includes Graphs, Charts, Diagrams, Tables, etc.
   - Analysis of data is important and the greatest part is when you compare your results to the expected results and theory. Must record your data directly on this part of the report and not on a draft paper. So you should plan ahead expected data space or add extra page(s) if needed to record your data directly on this part.
   - Data recording should not have correction fluid. Cancelled data should be only crossed with a line and then write corrections above it or below it (this way you can track changes and compare crossed data with new data).

7. **(new title but continued from previous part) Discussion:** Can be combination of typed and handwritten.

- Most important.
- Includes discussing cause of error (What went wrong with experiment that caused bad data, experimental errors, random errors, accidents, deviation from expected or theoretical results, environmental effects (such as room temperature, %RH, pressure, chemical purity, etc.
- Pose questions that confused you, pose postulate answers, our thoughts, etc.
- Every student needs to write his own discussion about the experiment. Students in one group cannot share their written discussions. However, you are encouraged to discuss your results with others then present your own written discussion.

9. **(new title but continued from previous part) Conclusions & Recommendations:** Can be combination of typed and handwritten.

- Important
- Conclude experimental report briefly & precisely
- Final analysis & observations.
- What you have learned and recommendations

10. **(new title but continued from previous part) References**

- Follow consistent uniform format for references such as:

- 1. T. Hamade, "**Electrostatic Charging Apparatus and Method**", USA Patent# 5,077,468, Dec. 31, 1991.
- 2. R. Jaisinghani and T. Hamade, clyde W. Hawley,"**Electrically Stimulated Filter Method and Apparatus**", USA Patent No. 4,853,005; Aug. 1, 1989. European Patent Appl. No. 86905658.0-, 1987.
- 3. R.A. Jaisinghani and T. A. Hamade, "Effect of Relative Humidity on Electrically Stimulated Filter Performance", JAPCA 37:823-828 (July1987).
- 4. T. Hamade, W. L. Pickwick, " **Electrostatic Processing of Polymer Electrets** ", ASME 1990 Winter Annual Meeting, Nov. 25-30, Dallas, TX.
- 5. H. J. White, Industrial Electrostatic Precipitation, Addison Wesley Publishing Company, Reading, MA p126-136 (1962).