

# Experimental Physical Chemistry

## Peer Review Evaluation Form

REVIEWER  
NAME: \_\_\_\_\_

PAPER ID: \_\_\_\_\_

### GENERAL GUIDELINES:

As you review your peer's paper, you should evaluate the following qualities:

1. Scientific Integrity (correct treatment of data, correct use of language, sound scientific interpretation of the results)
2. Completeness (are you left with unanswered questions?).
3. Presentation (are the points made clearly, is the style appropriate, etc.).

You should have all of the background knowledge necessary to completely understand this experiment (you may have to brush up on an equation or two if you have forgotten some of your background). Therefore, you should not be left feeling like you do not quite understand - it is the author's job to explain how each equation is relevant, why each step of the procedure or data workup is necessary, why a particular technique was used, and so forth. It is also the author's responsibility to expand your understanding of the topic during their discussion. All of these points should be considered as you complete your evaluation of the report (and as you write your own!).

Remember that the goal of scientific writing is to be at once concise and complete. The flow of logic should be clear and easy to follow. Organization of ideas is important - look to see if the authors have placed their information in the appropriate places.

Keep in mind that it is your job to not only edit or critique the *presentation* of the material, but more importantly the *science* itself (note that this is point #1 above!). This means checking calculations, critiquing data analysis methods, and critiquing the interpretation of results. You are welcome (and encouraged) to suggest alternate or additional methods or interpretations which you feel would be more valid or equally (or more) interesting/useful.

Some specific matters to look for in each section of the report are listed below. Comment on your assessment in the space provided. Please use the handout on report writing as a template for the kinds of information that should be contained in each section. You should also feel free to "mark-up" the paper in a *constructive* way if you have ideas for rewriting sentences, rearranging sections, etc.

| Peer Review Grade: (to be completed by instructor)    |            |
|---|------------|
| Critical review of the science content:               | /5         |
| Extent of detail in the review/constructive criticism | /5         |
| <b>Overall score:</b>                                 | <b>/10</b> |

**Instructions:** Place check marks, x's, or other evaluating marks (good, poor, etc.) in the boxes below to indicate the quality of each item in the list. Based on your evaluation, assign points for scientific correctness and presentation, and add these to get a total score for each section. Elaborate on your evaluation of the paper in the space marked "general comments". Specific comments or recommendations for specific changes can be made directly on the paper.

|   | <b>Scientific Correctness</b> | <b>Clarity and Presentation</b> | <b>Total Score</b> |
|---|-------------------------------|---------------------------------|--------------------|
| <p><b>TITLE:</b></p> <p>Is the title specific and informative; does the title complement the abstract?</p>  | <b>/3</b>                     | <b>/3</b>                       | <b>/6</b>          |
| <p><b>ABSTRACT:</b></p> <ul style="list-style-type: none"> <li>• Experimental method (what was measured, how was it measured).</li> <li>• Brief explanation of context.</li> <li>• Fundamental results (with error estimates if results are numerical)</li> <li>• Main conclusions and insight gained.</li> </ul>   | <b>/5</b>                     | <b>/10</b>                      | <b>/15</b>         |
| <p><b>INTRODUCTION:</b></p> <ul style="list-style-type: none"> <li>• Description of the physical problem that was studied (purpose of the investigation)</li> <li>• Description of the system that was studied</li> <li>• Relevance</li> <li>• Appropriate number and use of citations</li> </ul>   | <b>/5</b>                     | <b>/10</b>                      | <b>/15</b>         |
| <p><b>EXPERIMENTAL PROCEDURE:</b></p> <ul style="list-style-type: none"> <li>• Essentials of procedure (can you repeat this experiment?) &amp; important conditions (T, concentration, etc.)</li> <li>• Experimental design and reasoning (do you know why everything was done in the way that it was?)</li> <li>• Data workup details: equations, theory, brief error analysis (can you reproduce the numerical results?)</li> </ul> | <b>/10</b>                    | <b>/10</b>                      | <b>/20</b>         |

|  |            |            |             |
|--|------------|------------|-------------|
| <p><b>RESULTS:</b></p> <ul style="list-style-type: none"> <li>• Clear, logical, and <u>scientifically correct</u> presentation of the <u>relevant</u> results, including references to equations, figures and tables.</li> <li>• Use of figures and tables to outline the story</li> <li>• Explanation of what pieces of information from each figure or table are relevant and important</li> <li>• Descriptive figure legends and table headings</li> <li>• Clear &amp; uncluttered figures and tables, with appropriate labels, units, markers, etc.</li> </ul> | <b>/10</b> | <b>/10</b> | <b>/20</b>  |
| <p><b>DISCUSSION:</b></p> <ul style="list-style-type: none"> <li>• Sound scientific interpretation of results on a physical basis</li> <li>• Depth of interpretation (more than just final results should be interpreted here - intermediate and raw data should support ideas and be discussed)</li> <li>• Comparison to literature values and/or related ideas from literature</li> <li>• Discussion of any unusual results, results with high error, or interesting/relevant problems that arose</li> <li>• Use of citations</li> </ul>                         | <b>/10</b> | <b>/10</b> | <b>/20</b>  |
| <p><b>REFERENCES:</b></p> <ul style="list-style-type: none"> <li>• Appropriate format (J. Phys. Chem. style)</li> <li>• Appropriate number of references (3-5, at least 1-2 from original articles)</li> </ul>   |            |            | <b>/4</b>   |
| <b>Total Score</b>   |            |            | <b>/100</b> |

**GENERAL COMMENTS:** (Explain reasons for reduced points; provide constructive criticism for improvements to clarity, scientific accuracy, and completeness; comment on what is good). Continue on the back if necessary.