MATERIALS SCIENCE & SOLID STATE CHEMISTRY
Project Grading Rubrics

C O M M U N I C A T I O N

Criteria	Levels		
	Exemplary (A)	Competent (B)	Developing (C)
Format, style and audience	The report exhibits a clean, polished, and professional design. The report is well-written, clear and concise, and coherent. The report maintains appropriate formality, and it is tailored to address the needs of the audience.	The report exhibits a very good design and layout. The report is well-written and easy to read, but there may be some minor areas of awkwardness or lack of stylistic coherence.	The report format and design are adequate. The report is generally easy to comprehend, but some sections may be hard to follow or lack clarity or completeness.
Mechanics	The report is virtually free of spelling, punctuation, and grammatical errors. Word choices are appropriate. Errors are of the sort that are easily ignored or tolerated, given the overall quality of the report.	The report may contain some noticeable but relatively minor spelling, punctuation, word choice, or grammatical errors.	The report contains grammatical, punctuation, or spelling errors that distract the reader and are difficult to ignore.
Organization and structure	The report has clear goals and logical structure that supports the goals. The report is well-organized, transitions are smooth, and the organization is carried through the report steadily and successfully.	The report has clear goals and a logical structure that supports the goals. The report is generally well-organized and smoothly written; but there may be some minor problems with organization of the report content.	The report has a generally consistent overall organization and strategy, though it may be weak in some sections and have insufficient, awkward, or missing transitions between sections or ideas. The structure of the report may not fully support the goals.
Effectiveness and context	The report exhibits creativity and originality. The context is well-presented.	The report is purposeful and engaging, and it provides effective context.	The report is lacking in creativity, audience engagement, purpose, or context.
Tables and graphs	The report includes appropriate, accurate, and clear tables, figures, and graphs, with descriptive figure captions. Graphs are of correct type and include proper labels, scaling, and units.	Tables, graphs, and figures are generally accurate, appropriate, and clear; but some may contain minor errors.	Tables, graphs, or figures include significant errors that distract the reader and are difficult to ignore.
Reference sources	Information from researched sources is set up carefully and effectively woven into the text. Sources are properly referenced.	Appropriate sources are used, but incorporation of the reference information may be awkward or not well integrated.	Researched information is used very little, and the use of reference sources is not well integrated into the document.

Q U A N T I T A T I V E   A N A L Y S I S

Criteria	Levels		
	Exemplary (A)	Competent (B)	Developing (C)
Calculations and data reporting	Calculated and numerical values and units are accurate and complete. Quantitative data are reported with reasonable significant figures.	Most values are calculated properly; units are accurate and complete. Most quantitative data include reasonable significant figures;	Calculated values, numerical values, or units contain significant errors. Significant figures are not used properly.
Statistical analyses	Appropriate statistical analyses of data are included, and interpretations of statistical analyses are correct.	Statistics are included as necessary but may not always be used or interpreted appropriately.	Necessary statistics are not included or reported properly.
Connections	Key concepts and conclusions are supported by quantitative measures, equations, and models, as appropriate.	Quantitative information is included, and attempts are made at linking it to key concepts and conclusions.	Appropriate quantitative information is either not included or not connected to key concepts.
Support	Numerical experimental data are fully interpreted, supported by relevant theory, and compared with literature values.	Most numerical experimental data are interpreted properly and supported by relevant theory and literature.	Interpretation of experimental data is incomplete or contains inconsistencies or errors. Data are not well-supported by relevant theory and literature.

QUALITATIVE ANALYSIS

Criteria	Levels		
	Exemplary (A)	Competent (B)	Developing (C)
Interpretation, discussion, and support of results	All results are fully interpreted. Accurate conclusions are drawn and supported. Discussion is supported by relevant theory and literature citations. The document is free from technical errors.	Most results are properly interpreted and compared with literature values, but some results are not fully explained and supported. Conclusions are generally accurate, but may not be fully supported by the discussion.	Results are not interpreted in a logical way or compared with literature values. Analyses contain some technical errors. Conclusions lack accuracy or clarity.
Connections	The discussion provides clear and accurate presentation and interconnection of results, technical concepts, and relevant theory.	Most results, technical concepts, and theory are accurately presented, but some interconnections among these are unclear.	Results are presented and connections to technical knowledge are attempted; but the discussion lacks strong or clear connections of results to technical concepts or relevant theory.
Contextual framing	Clear, logical connections are drawn between technical information and pertinent contextual information.	Most technical information is connected to or informed by the appropriate context, but some of these connections may lack clarity.	Some connections between technical concepts and context are incorrect or incomplete.
Clear arguments	All arguments and assumptions are stated and fully justified.	Most arguments and assumptions are stated and justified.	Some assumptions are implied or incorrect; justification is weak.
Explanation of discrepancies	Discrepancies and uncertainties are identified and explained, as appropriate.	Discrepancies and uncertainties are identified, but not fully explained or discussed.	Discrepancies and uncertainties are not identified or explained.
Estimation	Estimation is used appropriately in support of the discussion. Estimated values are supported by accurate assumptions.	Estimation is generally used appropriately, but some assumptions used in the estimations may not be appropriate.	Some estimations are incorrect or improperly used.
Insight and significance	Discussion of results is not strictly informative. Insights are drawn regarding the significance of the results and analyses, and interesting observations or issues are discussed. When appropriate, suggestions for improvement of the system or component are described and supported by the analyses.	Some information is extrapolated and some new directions are explored in the discussion, but the directions are not carried through, or only a portion of the report's discussion is insightful, analytic, persuasive, or convincing. Some opportunities for interesting observations or insightful analysis are overlooked.	Unanswered questions (that could have been answered) remain. Few opportunities for insightful analyses are included, and the significance of the results is not explored.

DIAGNOSIS

Criteria	Levels		
	Exemplary (A)	Competent (B)	Developing (C)
Questions and hypotheses	Research questions and hypotheses are stated clearly, and the relationship between the two is clear. Experimental controls and variables are identified.	Research questions and hypotheses are stated, but one or both are not as clear as they might be, or the relationship between the two is not clear. Experimental controls and variables are identified.	Research questions and hypotheses are not stated clearly, and the relationship between the two is unclear. Experimental controls and variables are not identified.
Experimental approach	Experimental approaches are well-designed and allow control of selected variables. Procedures and data are well-documented.	Experimental procedures could be more efficiently designed, but they allow for implementation and collection of data. Most procedures and data are well documented.	Experimental procedures do not allow for proper experimental control and collection of pertinent data. Many aspects of the procedure and some data are not documented.
Implementation	Experimental procedures are safely and effectively implemented. Laboratory rules and protocols are followed.	Experimental procedures are safely implemented, but implementation of the experiments could be better. Laboratory rules and protocols are followed.	Experimental procedures are not safely or effectively implemented. Individuals are not always mindful of safety rules and laboratory protocols.
Problems	Problems that arise during implementation of procedures are identified and effectively addressed.	Problems that arise during implementation of procedures are identified but not addressed.	Problems that arise during implementation are not recognized.
Limitations and suggestions	Limitations and weaknesses of the experiment are discussed, and suggestions are made as to how to limit or eliminate them.	The limitations and weaknesses of the experiment are discussed, but no suggestions are made as to how to eliminate them.	Limitations and weaknesses of the experiment are not discussed.