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Lab Report Analysis

Lab reports are often held to a certain ~~level of~~ standard in terms of what they entail with the common traits being shared across the disciplines. The sections of a lab report consist of parts like a title, references, abstract, introduction, results and conclusion. Three sample reports that I have chosen are the *Color Rendering Properties of LED Light Sources from Rensselaer Polytechnic Institute, Impact of particle shape on electron transport and lifetime in zinc oxide nanorod-based dye-sensitized solar cells from CUNY City College,* and *Final Report: A fluidic Dump Combustor for Ramjet Engines* from SUNY Buffalo. These reports share a depth of structural similarity in their content of each section as well as differences towards one another.

Color Rendering Properties of LED Light Sources from Rensselaer Polytechnic Institute is a report written to address an earlier assumption of human subject responses relating to color preference by a light source as a constant. The purpose of this report was to test the color rendering property versus the color preference aspects of LEDs. The data collected showed that lower CRI(Color Rendering Index) light source were actually more preferred than light from high CRI halogen/Incandescents. This data was used by the report to ~~come to the conclusion~~ conclude that CRI has no correlation to people's' color preference. ~~The lab report then goes on to claim that a better metric is needed to quantify light source color rendering and preference properties.~~

The lab report titled *Impact of particle shape on electron transport and lifetime in zinc oxide nanorod-based dye-sensitized solar cells* from CUNY City College was written to bring into awareness

how particle shape may impact solar cells. Through measuring properties of synthesized ZNO products (SG-NR3 and SG-NP) and using techniques like electron microscopy and x-ray diffraction, the report came to the conclusion that nanoparticle shape is a parameter that affects electron dynamics. The goal of this lab was to indicate that the ratio between τ_d/τ_n (electron transport (τ_d) and electron lifetime (τ_n)) can be decoupled by different variables to create greater solar efficiency. Some of the variables tested included photovoltage response to a frequency modulated light source, values for τ_d and τ_n. Results showed that electrons had exited the working electrode of SG-NR3 more rapidly than that of the Strem-NP DSC. In conclusion, the study also concluded that nanoparticle shape is a parameter that affects electron dynamics in ZnO DSC electrodes. Nanorods of ~3:1 aspect ratio do not allow the the electron to be decoupled from combination, however, if the ratio was increased and porosity increased, electrons could take advantage of the higher electron mobility in ZnO.

Final Report: A fluidic Dump Combustor for Ramjet Engines from SUNY Buffalo is a lab report about the combustion systems regarding flame holders. The report was written to test the flame stabilization of two different types of flame holders: the bluff body and the fluidic. Both flame holders were inspected with regards to their rotation, instant vorticity, and turbulent vertical velocity. The fluidic flame holder had an overall more chaotic flame structure which allowed for the more efficient use of the combustion whereas overall, the more controlled flame structure did not. This was attributed to the baroclinic torque, and overall the study agreed towards the consensus that the fluidic flameholder was more efficient when compared to its bluff body counterpart in all aspects.

The Abstract is the entry point for most lab reports where a brief overview of what is being discussed is told. All three articles used jargon effectively. Often times, each of the reports would define some terms that seemed more complex, however, overall, an understanding of the field was to be

expected by the reader from the very start. With vocabulary like CRI, vorticity, and DSCs, complex terminology used benefited the audience to deepen trust and understanding in what is being discussed. Using professional language in their respective fields established a level of professionalism in the reports to which the audience could resonate easier with to digest information. The main job of an abstract is to give an overview and through the use of jargon the level of depth to the field as well as type of field can be gauged from the very start. In addition to knowing what to expect in the report in terms of content, the level of understanding is known through this technique.

You haven't added no new info w/ this sentence.

The introduction section of the lab reports was used accordingly to introduce the problems of the reports. Though the basis of creating an importance was established by all three reports, the article on flame holders did it best. "*Fig 1 Chemiluminescence of mean flame and schematic of the fluidic flame holder flow features*" is a pictorial representation of what the introduction had discussed ~~which neither of~~ the other reports had on the introduction. Being complex to a degree in their field, the concepts were hard to wholly understand and though I do not know what Chemiluminescence means, the pictorial representation allows me to better understand what is being discussed to formulate my own understanding. Where complex language may deter me from understanding, I can better grasp the importance of the article through the figure, thus making the introduction of the flameholder report most effective.

What does this mean?

Now analyze the rest of Fig 1.

It's your job to find out as you write this essay.

What about the other 2 reports?

You Analyze the reports. They are the subject, not you. You are simply the reasonably knowledgeable audience.

The experimental section of each report followed ~~what~~ their introduction ~~had led them to~~ accordingly. While two of the articles followed a two part model where they compared one variable to another, the article on ZNO conducted its tests with no regard to one exact variable. ZNO was compared to three different variables. This method of experimentation made it hard to understand what the study was regarding to in its findings later on. Having three things tested and compared made it hard to keep

Be more specific

track of all the information whereas just focusing on two variables specifically was easier to understand and as a result was more straightforward. Your claim needs evidence.

How could you reduce the word count of this sentence?

In the results portion of the labs, each of the labs all dedicated this space in content to display their data in general, yet they had some minor differences. ~~Within each of the results section,~~ all of the reports utilized graphs to visualize numerical data and display overall trends. Displaying a graph helped each of these labs as they were able to display a trend visually to their respective audiences. The result section then expanded on what the data had shown to describe what the implications and meanings of the data were regarding each of their respective content. Unlike the two other labs however, the lab regarding flame holders combined the discussion section with the results section. This created a longer section in all as the content was combined form both sections into one and made the content feel somewhat overwhelming while reading. It was at parts difficult to understand which part was the result and which part was the discussion. Need evidence

?

The discussion section, regarding the other two labs, both went into discuss the results section and the implication it brings to context. Unlike the report on LEDs, the report on ZNO used a graph titled *"electron lifetimes"(figure 4)* to in addition graphically discuss their findings. This is not the best course of action as new data is brought up in a section which is supposed to explain results from previous data. By adding new data in a section where it does not belong, the reader may feel overwhelmed ~~as a result~~, making ~~this choice questionable~~. If this data were moved to the data section, the results of it could be discussed more accordingly thus improving the organization and hopefully the understanding of the report.

— by what? How?

Which data?

What?

You haven't discussed all 3 reports. You haven't been specific about what you have included.

I have no idea what any of this means

The conclusions of each report ~~built off the result sections to come to a closed idea for the most part. The~~ lab report on flame holders had proved why fluidic bases were more efficient, LEDs established that CRI was not a good measure of lighting preference in their study, and the solar research on ZNo showed that it was not yet ready to be used to its full efficiency. ~~In terms of the field however,~~ not all of the labs had a sound ending to their report. Although the study ZNo showed that the ratio could ~~not be~~ decoupled at a certain ratio, they bring up that it may in a higher ratio. This leaves room for the question of what happens at that ratio. On the contrary, the other two labs establish a sound ending with an end result. This is a significant difference as it correlates to again each of their respective purposes and what the lab was intending to accomplish.

While the studies on CRI related to LEDs and flame holders had sought out to report about something concrete in their abstracts, the report on ZNo solar cells was more abstract and open. Based on the structure and content in each of the reports, they accomplish what they had but the ZNo solar report ended with an open conclusion as it was a new study into something not as well known. The report on flame holders already knew their outcome and proved it with their two-variable experiment, and the report on LEDs conducted a psychophysical experiment to test an earlier hypothesis but the ZNo particle report had conducted a test into something not as well known. Through reading these lab reports, it can be understood that even in common subject areas, there can be great differences in the structure and organization of information.

References:

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Alpha Order

Incomplete citations