Optimization for Quantum Dot nanoparticles

ENGR 132 Design Project

Submitted to Professor Hylton

of

Purdue University

by

Section 38/13, Team 13

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In Partial Fulfillment of the

Requirements for the Class

ENGR 132 - Transforming Ideas to Innovation II

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Table of Contents

Design Process Step and Documents Page/Tab

|  |  |
| --- | --- |
| **EXECUTIVE SUMMARY** |  |
| **M1 SUMMARY** |  |
| **M2 SUMMARY** |  |
| **M3 SUMMARY** |  |
| **M4 SUMMARY** |  |
| **M5 SUMMARY** |  |
| **M6 SUMMARY** |  |
| **M7 SUMMARY** |  |
| **M8 SUMMARY** |  |
| **M9 SUMMARY** |  |

Executive Summary

(Completed during MS9; 1-2 pages)

Replace this text with a paragraph answering the following questions:

* Who is the partner for this project?
* What is the larger task that our project partner needs us to complete? (Re-read the memo from nanoHUB and your answers to questions in M1.)
* What is the specific (immediate) task your team is trying to complete? When answering this question,
  + Identify your target audience and
  + State your goals for the simulation suite.
* What is your solution? When answering this question,
  + Briefly describe each mathematical model and
  + Describe how the target user can explore each model through a simulation

We are partnering in this endeavor with nanoHub. We are developing a simulation suite that helps our clients visualize certain aspects of the photovoltaic panel fabrication process, as it relates specifically to quantum dot nanoparticles. For the direct user (the PV fabrication team), our goal is to provide them with a way of easily testing different ‘recipes’ for mixtures of QD materials in order to achieve a given average band gap energy. (We haven’t gotten a solution yet). (We haven’t reached this level yet).

Replace this text with a paragraph answering the following questions:

* How do you define success? Provide a ***critical*** evaluation of the effectiveness of your simulation suite with respect to *each* of the **five** criteria for a success (see the memo from our project partners). ***For each criterion, provide strengths AND weaknesses***. ***Be specific by making reference to identifiable features of your solution*.** All solutions have weaknesses, so your team needs to think critically about what needs to be done to bring your solution up to a professional quality product that is ready for your target audience to use on nanoHUB.org.

Milestone 1 Summary

(1-2 paragraphs, 0.5-1 page)

The outcome of Milestone one was a collection of information relating to the development and implementation of PV Quantum Dot technology. Briefly, the information contained in the document is organized as follows. The initial section is a reflection on the problem at hand, what is needed? By what are we constrained? For whom are we making this product? The second section is a list of potential stakeholders in PV technology, as well as a description of each and whether or not that particular party would be in direct contact with our proposed product. We were then asked to evaluate our list of stakeholders and narrow it down to one particular primary direct user for whom we would be specializing our simulation suite. Once we had picked one and given our reasons for doing so, we then researched and brainstormed about what we would need to know in order to create a simulation suite that would actually be useful to our chosen user. The end goal of this milestone was to narrow down the end result of the project, to force us to think about and research our direct user, so that when it comes time to actually produce the suite, we will have the information necessary to develop a set of simulations that have a direct correlation to the needs of the user.

The main feedback that we received was directed at our oversight as far as citations and proper formatting.

We addressed these concerns by properly formatting our citations and including correct in-text attributions.

Milestone two was an assignment that was designed to elicit from our team a further distilled list of the concepts and ideas that had been generated in the previous Milestone. In short, Milestone two is organized according to the following description. The first section of Milestone two is devoted to a short recap of Milestone one, the feedback we had received from the peer team and how we planned to address it. The next portion is a table where we catalogued more than a score of concepts that we thought would be viable simulations, either freestanding or combined with one or more other concepts from the list. Within each idea, we also communicated the evidence we had found as to why this concept was useful. There were also associated boxes for the sources we had discovered in our research, the concept generation strategies we had implemented, as well as for the specific user criteria we deemed individual concept addressed. Following that segment was another table set aside for our full APA formatted citations (in alphabetical order), as well as a space for a few lines from each member describing their individual contributions to the Milestone.

We received very positive feedback on our work for Milestone two. The reviewer did not have any critiques concerning either our content or formatting. Pursuant to this favorable assessment we did not make any changes to M2 and attempted to apply our previous standards to the current Milestone.

Include similar summary paragraphs for each Milestone 2-9