

Process Memo

for PH 403, Winter 2019

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Introduction

I want to open by thanking you for your flexibility and support, Ethan, over the course of the last year (and more). Research and my thesis have been particularly stressful parts of my time as an undergraduate, and I regret a lot of decisions I've made that led me to put off this work for so long. I'm grateful to have people like you and Matt in the department who have the experience and patience to continue working with me while I have not always remained focused.

At this stage, it would be relatively easy for me to change my major to computer science. I've found that many of my interests lie in that field, and I intend to start a career in computing when I leave OSU. However, I've invested a lot of time and effort into the physics program, and I don't want to leave all of that experience behind. My goal is to finish this thesis--whether I like the end result or not--and graduate this spring.

Thanks again for your continued support. It means a lot.

Successes of Draft 2

I've found that I need to block out specific times for reading and for writing in order to make progress. I've also found it difficult to sit down and write for more than an hour to 90 minutes. Moving forward, I think this will help me improve my time management by planning for more frequent, shorter writing sessions.

After reviewing some articles about instrument building, I found more confidence going into the Methods section to write about the motivation and thinking behind each component of my instrument. The methods section still has a lot of blank space, but I am looking forward to continuing work there because the hardware and process of using the instrument are what I'm most confident writing about.

The Writing Process

Since sitting back down to work on draft 2, I have found myself asking a lot of questions and leaving a lot of notes in my manuscript as I write. At this stage I still feel like I don't have a strong understanding of some of the fundamental concepts of solid state physics that are important to my topic--but, as I challenge myself to continue writing in the sections I don't understand well, I think those questions and notes will lead me to do more reading on the fundamentals, ask more questions of the people working in my group, and gain a more thorough understanding of the data I've collected and what it means.

Summary of Feedback

Looking back on Winter 2019, it's apparent that I never completed Draft 1 and, as a result, never got feedback

from my peers. I'm submitting a pseudo-Draft 1 with this memo, which is everything I had written before sitting down to meet this deadline.

The following list is made up of a few notes I've gotten in conversations with Ethan or Matt, and some notes I made myself upon reviewing the attached Draft 1.

Title

- Remove NIR, because we never finished setting up the NIR detector and have no data.*(Done)*

Introduction

- Correct a handful of spelling errors *(Done)*
- Expand on the drawbacks of the existing system. Be *specific* about the optical table and the way the fluorimeter is coupled to the microscope there. Add details about the light source and why it's not as good as the laser. *(In progress)*

Background

- Needs a *lot* more content added. *(Will need to work more on this in early spring... gather more references, learn more fundamentals of solid state.)*

Methods

- Change name "Experimental" --> "Methods" *(Done)*
- Needs content! *(In progress, I feel I'm off to a good start)*

Results

- Ethan suggests low excitation power incident on sample could result in a noisy spectrum. Find references to back this up? Get specs of the fluorimeter light source and laser diode to back this up? *(Still to-do. I like this question)*
- Who made the samples that were measured? *(Reasonably sure they came from Sam Grimm's thesis, need to ask Matt about this)*
- Is there a better phrase than "new system" for the experimental setup described by this thesis? *(Did a little reading, and I'm trying to use "microspectrometer" from the title and "new instrument" more)*
- Use "laser spot" when talking about light incident on the sample, not "laser beam" *(In progress. Not sure I've found all instances of "beam" yet)*
- Convert x-axis of figures to eV *(Perhaps? I'm seeing lots of figures in nm still in the literature.)*
- Cut MoS₂ from results section. Was never measured, have no data. *(Done)*
- Write *any* results under CdSe section *(Started! What more should I be saying about my results?)*
- Inline plots if possible (so they don't take up entire pages on their own) *(This is some LaTeX funkiness. Still to-do)*