

**Application of Microphotoluminescence Spectroscopy to
Study Semiconductor Quantum Well Disorder.**

by

M. W. Day

A thesis submitted to the
Faculty of the Graduate School of the
University of Colorado in partial fulfillment
of the requirements for the degree of
Bachelor of Science
Department of Physics

2015

This thesis entitled:
Application of Microphotoluminescence Spectroscopy to Study Semiconductor Quantum Well
Disorder.
written by M. W. Day
has been approved for the Department of Physics

Prof. Steven Cundiff

Prof. Rachel Goddard

Ms. Thora Nea

Date _____

The final copy of this thesis has been examined by the signatories, and we find that both the content and the form meet acceptable presentation standards of scholarly work in the above mentioned discipline.

Day, M. W. (B.S.)

Application of Microphotoluminescence Spectroscopy to Study Semiconductor Quantum Well Disorder.

Thesis directed by Prof. Steven Cundiff

Manufacturing processes unintentionally introduce fluctuations in the width of semiconductor quantum wells. These fluctuations subtly modulate the optical emission energies of excitons confined within the quantum well layer. It is therefore imperative to quantify these width fluctuations so their effect on exciton confinement potentials can be accounted for in ultrafast spectroscopic studies of semiconductor quantum wells. The use of micro-photoluminescence spectroscopy makes quantifying this disorder possible. I present microphotoluminescence spectroscopy work taken in pursuit of an Honors' thesis.

Dedication

To my friends on the playground.

Acknowledgements

asdf

Contents

Chapter

Tables

Table

Figures

Figure

ashy