

List of Completed Master's Topics

Optical Engineering Thesis

Study of Surface Plasmon Resonance in Metal and Alloy nanofilms using Maxwell Description and Metamaterial Simulation in COMSOL

by Heesoo Park

M.S. (OE) Thesis Dual Degree with Seoul Tech Univ.: supervisor: Dr. Azad Siahmakoun

Increasing the Sensitivity of the Michelson Interferometer through Multiple Reflection

by Woonghee Young

M.S. (OE) Thesis Dual Degree with Seoul Tech Univ: supervisor: Dr. Charles Joenathan

The Preparation and Experimental Verification of a Photonics Switch with Series Connected SOAs Integrated onto a Single Device

by Michael E. Plascak

M.S. (OE) Thesis: supervisor: Dr. Azad Siahmakoun

Study of Laser Speckle Scattering in Vitreous Humor Models

by Wanseok Oh

M.S. (OE) Thesis Dual Degree with Seoul Tech Univ: supervisor: Dr. Charles Joenathan

A Study on Development and Evaluation of Accuracy for the Spherical Coordinate 3D Scanning System

by Sangwook Park

M.S. (OE) Thesis Dual Degree with Seoul Tech Univ: supervisor: Dr. Sergio Granieri

Quantitative Data Extraction using Spatial Fourier Transform in Inversion Shear Interferometer

by Yanzeng Li

M.S. (OE) Thesis: supervisor: Dr. Scott Kirkpatrick

A Study of Scattering Characteristics for Micro-scale Rough Surface

by Yonghee Won

M.S. (OE) Thesis Dual Degree with Seoul Tech Univ: supervisor: Dr. Robert Bunch

Fabrication and Characterization of Edge-Emitting Semiconductor Lasers

by Junyeob Song

M.S. (OE) Thesis Dual Degree with Seoul Tech Univ: supervisors: Drs. Paul Leisher/ Wongjon Joo

Calculation and Experimental Verification of Longitudinal Spatial Hole Burning in High-Power

by Ting Hao

M.S. (OE) Thesis: supervisor: Dr. Paul Leisher

Improvement of Performance and Design Parameters Analysis for Enhancing Resolution in an Atmospheric Scanning Electron Microscope (ASEM)

by Yeohun Yoon

M.S. (OE) Thesis: supervisor: Dr. Wonjong Joo, Seoultech, South Korea

All-Optical Sigma-Delta Modulator for Analog-to-Digital Conversion

by Bin Zhang

M.S. (OE) Thesis: supervisor: Dr. Sergio Granieri

Product Development of the Optical Subsystem of a Biomedical Device

by Andrew Boneff

M.S. (OE) Thesis: supervisor: Dr. Robert Bunch

RF Vector Modulator using 8-tap Optical Hilbert Transformer

by Ryand Tucker

M.S. (OE) Thesis: supervisor: Dr. Azad Siahmakoun

Evolution of Surface Structures via Ultrashort Pulse Processing

by Jessica Wittig

M.S. (OE) Thesis: supervisor: Dr. Galen Duree, Jr.

Photonic Asynchronous Delta-Sigma Modulation

by Erin Reeves

M.S. (OE) Thesis: supervisor: Dr. Azad Siahmakoun

A Photonic Analog-to-Digital Converter Based on Delta-Sigma Modulation

by Yiye Jin

M.S. (OE) Thesis: supervisor: Dr. Azad Siahmakoun

Measurements of Optical Nonlinearities Using a Nanosecond White Light Continuum

by Tyler Masterson

M.S. (OE) Thesis: supervisor: Dr. Robert Bunch

High Speed Optical Accumulator for a High Speed Delta Sigma Optical Analog to Digital Converter

by Aaron Cole

M.S. (OE) Thesis: supervisor: Dr. Azad Siahmakoun

Wideband Photonic RF Phase Shifter

by Alex Mulvihill

M.S. (OE) Thesis: supervisor: Dr. Azad Siahmakoun

High Speed All-Optical Digital-to-Analog Conversion

by Christopher Dapkus

M.S. (OE) Thesis: supervisor: Dr. Azad Siahmakoun

The Design and Characterization of MEMS Interferometric Sensing

by Ryan Snyder

M.S. (OE) Thesis: supervisor: Dr. Azad Siahmakoun

Dispersion Measurements Using Refractive and Interferometric Techniques

by Mary Ann Matthew

M.S. (OE) Thesis: supervisor: Dr. Robert Bunch

Hysteretic Bistable Device for All-Optical Analog-to-Digital Conversion

by Nazanin Hoghooghi
M.S. (OE) Thesis: supervisor: Dr. Sergio Granieri

Detection and Measurement of Ultra-Short Pulsed Laser-Induced Filaments in Air

by Ken Meyer
M.S. (OE) Thesis: supervisor: Dr. Galen Duree, Jr.

Sensing Liquid Levels and Measuring the Contact Angles Using Optical Techniques

by Huiyong Liu
M.S. (OE) Thesis: supervisor: Dr. Robert Bunch

Fluorescence Correlation Spectroscopy of Asphaltenes

by Marc Schneider
M.S. (OE) Thesis: supervisor: Dr. Sudipa Mitra-Kirtley

Optical Bistability of Semiconductor Optical Amplifier in a Fiber Ring

by Seifu Teferra
M.S. (OE) Thesis: supervisor: Dr. Azad Siahmakoun

Optimization of Chirped Photorefractive Gratings in LiNbO₃Fe

by Vivek Jeevan
M.S. (OE) Thesis: supervisor: Dr. Galen Duree

Polymer Waveguide-based Short Distance Optical Interconnects

by Kamal Yadav
M.S. (OE) Thesis: supervisor: Dr. Azad Siahmakoun

A Novel Approach to Undersampling for Analog-to-Digital Conversion Using Optical Differential with a Photorefractive BaTiO₃ Crystal

by Noah Bock
M.S. (OE) Thesis: supervisor: Dr. Azad Siahmakoun

Characterization and Construction of an Optical Tweezers System

by Christina Bauer
M.S. (OE) Thesis: supervisor: Dr. Robert Bunch

Fabrication of Multiple Fiber Bragg Gratings on Single-Mode Fiber Using One Phase-Mask

by Nigel Sayers
M.S. (OE) Thesis: supervisor: Dr. Azad Siahmakoun

Fabrication and Characterization of Holographic Optical Elements Recorded on Silver Halide Materials for the Design of an Achromatic Fourier Processor

by John G. Smith
M.S. (OE) Thesis: supervisor: Dr. Robert Bunch

Design and Implementation of a Laser Rangefinder/Designator Beam Metrology System for Beam Characteristic Analysis Through Environmental and Atmospheric Conditions

by Chris Middlebrook
M.S. (OE) Thesis: supervisor: Dr. Robert Bunch

Applied Optics Thesis

Spectroscopic Instrument Controls and Calibration

by Zhan Chen

M.S. (AO) Thesis: supervisor: Dr. Robert Bunch

Two Simultaneous Independent RF Beams Optical Beamformer

by Mark Jaeger

M.S. (AO) Thesis: supervisor: Dr. Azad Siahmakoun

Chirped Photorefractive Grating in LiNbO₃: Fe Crystal

by Nadin Roesler

M.S. (AO) Thesis: supervisor: Dr. Azad Siahmakoun

Fiber Optic Beamformer with Programmable Binary True Time Delay Matrix at 1310nm

by Sean Durrant

M.S. (AO) Thesis: supervisor: Dr. Azad Siahmakoun

Fiber Bragg Grating: Theory and Fabrication

by Yongbin Lin

M.S. (AO) Thesis: supervisor: Dr. Robert M. Bunch

Polarization-independent Two-channel MUX/DEMUX using a Photorefractive Lithium Niobate Crystal

by Martin Nagel

M.S. (AO) Thesis: supervisor: Dr. Azad Siahmakoun

An Investigation of Electrical Fixing and Coercive Field Measurement in a Photorefractive SBN:60 Crystal

by Safoora Sedigh Sarvestani

M.S.(AO) Thesis: supervisor : Dr. Azad Siahmakoun

A Digital Method for Real-Time Autofocusing of a Microscope

by Chad Gerard Macy

M.S.(AO) Thesis: supervisor : Dr. Charles Joenathan

Design and Assembly of Pulsed Ruby Laser ESPI with Contrast Fringe Enhancement Using Digital Image Processing

by Paul Michael Jeatran

M.S.(AO) Thesis: supervisor : Dr. Arthur B. Western

Resonant Fluorescence Quenching by CS₂ and Asphaltene Molecular Size and Structure Analysis by Fluorescence Anisotropy

by Henning Gronzin

M.S.(AO) Thesis: supervisor : Dr. Sudipa M. Kirtley

Temperature Controlled Two-Beam Coupling and Phase Conjugation at 1.32 um in Photorefractive InP:Fe

by Dirk Jurgens

M.S.(AO) Thesis: supervisor : Dr. Azad Siahmakoun

A Fiber Optic Sensor for Measuring the Vibration Frequency of Reflective Surface

by Jingbo Cai
M.S.(AO) Thesis: supervisor : Dr. Robert M. Bunch

Tracking Photorefractive Microscope

By Torsten Blaetter
M.S.(AO) Thesis: supervisor : Dr. Azad Siahmakoun

Ultraviolet, Visible, and Near-Infrared Laser-Induced Fluorescence of Limestone

by Joseph R. Bezouska
M.S.(AO) Thesis: supervisor : Dr. Sudipa M. Kirtley

The effects of Optical Aberrations on Photolithographic Processes

by Jianhua Li
M.S.(AO) Thesis: supervisor : Dr. Jerome Wagner

Phase Unwrapping by Neural Network

by Rongguang Liang
M.S.(AO) Thesis: supervisor : Dr. Michael F. McInerney

Fabrication and Testing of a Photorefractive Polymer Composite

by Andres Heidebrecht
M.S.(AO) Thesis: supervisor : Dr. Azad Siahmakoun

Detection of Defects in Plastic Film and on Wood Board by Machine Vision Inspection

by Xiaoye Xi
M.S.(AO) Thesis: supervisor : Dr Brij Khorana

Application of Magneto-optic Kerr Techniques for Domain Observation in Transformer Steel (SiFe)

by Bryan E. Hall
M.S.(AO) Thesis: supervisor : Dr. Jerome Wagner

Characterizations and Applications of Boulder Nonlinear System Spatial Light Modulator

by Wei Li
M.S.(AO) Thesis: supervisor : Dr. Robert M. Bunch

Measurement of In-Plane Displacement by Speckle Photography with Fourier Filtering

by James David Walls
M.S.(AO) Thesis: supervisor : Dr. Arthur B. Western

Design and Construction of a Stellar Photometer

by Jorg Wiedmann
M.S.(AO) Thesis: supervisor : Dr. Richard Dittion

Optical Tomography of Human Tooth

by Igor R. Vinogradov
M.S.(AO) Thesis: supervisor : Dr. Brij Khorana

Design of a Frequency-Selective Fiber Optic Vibration Sensor

by Chandra Sekhar Kakani
M.S.(AO) Thesis: supervisor : Dr. Robert M. Bunch

Development of a Fiber Optic Absorption-Based Chemical Sensor

by Laura Leanne Tougaw

M.S.(AO) Thesis: supervisor : Dr. Robert M. Bunch

Application of Dynamic Speckle in Tooth Diagnostics

by Vladimir G. Krylov

M.S.(AO) Thesis: supervisor : Dr. Brij Khorana

An Investigation of Self-focusing and Self-defocusing in a Photorefractive SBN Crystal

by Detlef Breitling

M.S.(AO) Thesis: supervisor : Dr. Azad Siahmakoun

The Optical Component Design for a Biomedical Endoscope

by Aaron Barr

M.S.(BE) Thesis: supervisor : Dr. Brij Khorana

Study of the Photorefractive Phase Shift in a BaTiO₃ Crystal using an Interferometric Technique

by Jürgen Rainer Spielvogel

M.S.(AO) Thesis: supervisor : Dr. Azad Siahmakoun

Genetic Algorithm for Optical System Optimization

by Jeffrey Kwok

M.S.(AO) Thesis: supervisor: Dr. Richard Dittion

Simple Geometric Shape Recognition by Genetic Algorithms

by Allen Jin Yuan

M.S.(AO) Thesis: supervisor: Dr. Michael F. McInerney

Investigation of the Temporal Behavior of a Semi-Linear Photorefractive Resonator

by Gerd Klose

M.S.(AO) Thesis: supervisor: Dr. Azad Siahmakoun

Digital Image Processing Algorithm Development for Segmentation and Classification of Nuclear Particle Tracks in Lexan Slides

by Douglas E. Childers

M.S.(AO) Thesis: supervisor: Dr. Robert M. Bunch

Novel Techniques for Wavefront Shearing in ESPSI Using Diffraction Gratings

by Lutz Burkle

M.S.(AO) Thesis: supervisor: Dr. Charles Joenathan

Increased Sensitivity to In-Plane Displacements in Electronic Speckle Pattern Interferometry

by Alexander Matthias Sohmer

M.S.(AO) Thesis: supervisor: Dr. Charles Joenathan

Microlensed Fiber Optic Confocal Microscope Probe

by Randy Lee Gove

M.S.(AO) Thesis: supervisor: Dr. Robert M. Bunch

Study of Induced Photothermal Phase Variations in ZrSiO₂ Anti-reflection Coating Using a

Photorefractive Schlieren System

by Paul Wayne Southard

M.S.(AO) Thesis: supervisor: Dr. Azad Siahmakoun

Dispersion Measurement Systems for Optical Fibers

by Fei Shen

M.S.(AO) Thesis: supervisor: Dr. Robert M. Bunch

Dynamic Laser Speckle Studies of Botanical Specimens

by Zijie Xu

M.S.(AO) Thesis: supervisor: Dr. Brij M. Khorana

Incorporating a 1550 NM Laser Diode in a Fiber Optic ESPI System

by Christopher Orcutt

M.S.(AO) Thesis: supervisor: Dr. Charles Joenathan

Optical Phase-conjugate Shear Interferometer with Multiple Wavelengths in Photorefractive Medium

by Konstantine Yurievich Kos

M.S.(AO) Thesis: supervisor: Dr. Azad Siahmakoun

Automated Detection of Surface Defects

by Pyotr Shmelev

M.S.(AO) Thesis: supervisor: Dr. Brij M. Khorana

A Study of Dichromated Gelatin and the Construction of Holographic Optical Elements

by Jay E. Sharping

M.S.(AO) Thesis: supervisor: Dr. Charles Joenathan

Projection Moire Contouring System for Testing F/0.1 Plastic Parabolic Reflectors

by Andrew Harrison Fagg

M.S.(AO) Thesis: supervisor: Dr. H. Philip Stahl

Design and Calibration of a Two-Channel Ronchi System to Contour a Dynamic Fluid Surface

by William Stephen Meyers

M.S.(AO) Thesis; supervisor: Dr. H. Philip Stahl

Direct Fabrication and Testing of Fiber Optic Microlenses

by Eric A. Roth

M.S.(AO) Thesis; supervisor: Dr. R. M. Bunch

A Hybrid-Photorefractive Character-Recognition System

by Thomas Harrer

M.S.(AO) thesis; supervisor: Dr. A. Siahmakoun

A Fiber Optic ESPI System Using Diode Laser

by Song Peng

M.S.(AO) thesis; supervisor: Dr. B.M. Khorana

Surface Characterization of Aluminized Parabolic Reflectors Using Light Scattering Techniques

by Randall Lee Ecklar
M.S.(AO) thesis; supervisor: Dr. R. M. Bunch

Design of Lenses Dominated by Third-Order Aberrations

by Zhong Xie
M.S.(AO) thesis; supervisor: Dr. J. F. Wagner

Holographic Interferometric Study of the Human Cardiac System

by Glen Brown
M.S.(AO) thesis; supervisor: Dr. A. B. Western

Time-Integrating Self-Pumped Phase Conjugator

by Erik Oldekop
M.S.(AO) thesis; supervisor: Dr. A. Siahmakoun

Studies of Wavelength Dependent Loss Effects in Optical Fiber Components and Sensors

by Sami D. Al-Aruri
M.S.(AO) thesis; supervisor: Dr. R. M. Bunch

Lens for Microlithography

by Hung-yu Hsieh
M.S.(AO) thesis; supervisor: Dr. J. F. Wagner

Phase-Conjugate Shear-Interferometer

by Guanglu Yang
M.S.(AO) thesis; supervisor: Dr. A. Siahmakoun

Part 1: "Y-Y Diagram for the Axial Gradient"

Part 2: "Design of the Nonlens"

by Michael R.L. Coon
M.S.(AO) thesis; supervisor: Dr. R. Ditteon

Energy Losses in a Dielectric-Metal Slab Waveguide System

by Danjin Wu
M.S.(AO) thesis; supervisor: Dr. J. F. Wagner

Veiling Glare in the F4111 Image Intensifier

by Mukund Acharya
M.S.(AO) thesis; supervisor: Dr. R. M. Bunch

Enhancement of Fringe Visibility with Photorefractive Processor

by Markus R. Weiss
M.S.(AO) thesis; supervisor: Dr. A. Siahmakoun

Forward Light Scattering From Optical Fibers

by Seungug Koh
M.S.(AO) thesis; supervisor: Dr. R. M. Bunch

Noninvasive Study of Human Cardiac Cycle Using Holographic Interferometry

by Daniel T. English
M.S.(AO) thesis; supervisor: Dr. A. B. Western

Optical Nondestructive Testing of Metallic Honeycomb Bonding

by Brian W. Eliason

M.S.(AO) thesis; supervisor: Dr. A. B. Western

Prototype Right Angle Fiber Optic Connector and Bend Loss of Optical Fibers

by Roger S. Cannon

M.S.(AO) thesis; supervisor: Dr. R. M. Bunch

Measurement of Static Displacements Using Digital Speckle Pattern Interferometry and Image Processing

by Christopher L. Eichelberger

M.S.(AO) thesis; supervisor: Dr. B. M. Khorana

Characterization of heat-treated Photorefractive Crystal BaTiO₃

by Yuh-Kuan Ding

M.S.(AO) thesis; supervisor: Dr. A. Siahmakoun

Integration of a Laser Diode into a Digital Speckle Pattern Interferometer

by Erhard Krumpholz

M.S.(AO) thesis, Part II; supervisor: Dr. B. M. Khorana

Characterization of and Coupling into Thin Dielectric Films

by Erhard Krumpholz

M.S.(AO) thesis, Part I; supervisor: Dr. J. F. Wagner

Angularly Polished Optical Fibers and their Application to Right-Angle Connectors

by Joseph P. Caughey

M.S.(AO) thesis; supervisor: Dr. R. M. Bunch

Characterization of Radiation Loss from Formed 90° Bends in Optical Fibers

by Dirk A. Hall

M.S.(AO) thesis; supervisor: Dr. R. M. Bunch

Displacement Measurement by Holographic Interferometry and Comparison with Speckle Methods

by Sean C. Lee

M.S.(AO) thesis; supervisor: Dr. R. D. Bahuguna

The Development of an Improved ESPI System

by Jon S. Edmondson

M.S.(AO) thesis; supervisor: Dr. B. M. Khorana

Modeling Interference and Diffraction Effects in Photolithography

by Stephen D. Horchem

M.S.(AO) thesis; supervisor: Dr. J. F. Wagner