Nanoptronics Research Center

Professor Shahram Mohammadnejad

Faculty of Electrical Engineering

Iran University of Science and Technology

Optoelectronics

Projects

Solar Cell Fabrication

This Project is the fabrication of solar cell based on GaAs and its purpose is fabrication of industrial solar cell and training of specialists in this field

Design of a Novel Structure for Photonic Crystal Fiber and its Optimization

In this project a new method for design and optimization of photonic crystal fiber based on neuro-fuzzy intelligent method and De/EDA genetic algorithm is presented.

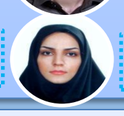
Investigation of Electrical and Optical Properties of Antireflection Coatings Structures Used in New Generation of Solar Cells.

In this project various types of antireflection coatings used in solar cells based on concentrators and thin film cells is investigated.

Members:

Ali Bahrami

Aryan Salmanpour



Saeede Soleimani Nejad

Nanoptronics Research Center has been founded from the establishment of optoelectronics and laser laboratory by professor Shahram Mohammad Nejad in 1997 and with the addition of Quantronics, Nanoelectronics laboratories in 2007 has been expanded to Nanoptronics Research Center. In this center an average of about 20 faculty and PHD and MSc students is working on research and industrial projects. Since 1997 more than 40 PHD and MS students has been graduated from this center and also over 200 papers and about 10 books has been published .

Nanoelectronics

Projects

Design and Modeling of QCA Nano systems and Nano Devices

Molecular QCA has been introduced as replacement for CMOS technology. The purpose of this project is modeling of nano device behavior in molecular level using quantum chemistry.

Thin Film Titanium Oxide Fabrication on Quartz Substrate and investigation of Silver Nano Particle effects on its Electrical and Optical Properties.

In this project thin film titanium is fabricated on Quartz layer using spin coating and sol gel technology.

Members:

Ehsan Rahimi

Alireza Bazmara Hosseini

Mohammad Hossein Haji Gholam

Reticle Seekers

Projects

Design and fabrication of Laser Range Finder

In this project while methods of distance evaluation and measurement by laser is investigated, increase in resolution capability with phase method is also addressed.

Dual Band UV-IR Detection in Reticle Seekers

In this project a new reticle is designed which has the capability of position detection of target and in comparison to ICA and Rosette methods is faster and can work truly in presence of false targets.

Members:

Saeed Olyaee

Quantronics

Projects

Design and Modeling of Quantum Repeaters in Quantum Communication

In this project design of quantum repeater, Relation between its components and their performance is described and Then design and implementation of some subcomponents of repeater is done.

Optical Quantum Computation with Entangled Photons

In this project entangled photons are produced using linear optics and quantum information processing base of these entangled pairs is implemented.

Investigation and Analyze of consciousness in Quantum mind

Quantum mechanics with introducing issues such as entanglement can describe brain consciousness very well in which phenomena beyond classical physics occur .

Members:

Masoomeh Taherkhani

Ghasem Nourani

Hamed Gholi Pour

Microelectronics

Projects

SiO_2, SIC, TiO_2 Detectors

The purpose of this project is to acquiring fabrication technology of SiC layers with n and p doping, producing of SiC ultraviolet detectors and simulating of fabrication process.

Design and Simulation of Ultraviolet Detectors base on ZnO.

In this project mechanism of current transmission in ultraviolet detectors base on ZnO is investigated and analyzed.

Members:

Zahra Alaie Varnosfaderani

Star Tracker

Projects

Algorithms and Structures of Star Trackers

In this project an optimized algorithm based on selected characteristics of stars is presented.

Algorithm and block diagram design in Star Detector for Determination of Star Angular Direction

In this project an optimized algorithm is presented. How to perform processing of input image is investigated. Various noise in star images and their elimination, is analyzed and the selection of optimized method is presented.

Investigation of various types of star detectors and analyze of their parameters for image identification

In this project various detectors are classified and specifications required for star detection such as number, size, gray area, center of amass,... are defined

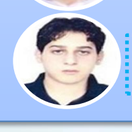
Members:

Mehdi Nasiri

Seyed Ali Bagheri Madineh

Masood Norian

Amir Hossein Rostami



Sobhan Roshani

Administrator:
Shahed Mohammad Nejad