

Leonid Chernyak

Professor
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Education

Lvov Technical University (Ukraine) Semiconductors M.Sc., 1986
Weizmann Institute of Science (Israel) Semiconductors Ph.D., 1996
Colorado State University & Wide Band Gap Semiconductors 1996
Texas Tech University

Appointments

- **August 2011 – present: *Professor*** in the Department of Physics at the University of Central Florida. Research is focused on studies of minority carrier transport in Wide and Narrow Band Gap semiconductors as well as on *UV* and *IR* sensors.
- **August 2005 – August 2011: *Associate Professor*** (tenured) in the Department of Physics at the University of Central Florida. Research was focused on studies of minority carrier transport in Wide Band Gap semiconductors.
- **November 1999 – August 2005: *Assistant Professor*** in the Department of Physics at the University of Central Florida. Research efforts were focused on dopants and point defects in semiconductors. This includes studies of electron injection-induced effects in III-Nitrides and of electric field-induced effects in ionic-electronic semiconductors.
- **February 1997 – November 1999:** Member of technical staff at Intel Corporation, working on flash memory and logic technology development. Work was focused on performance analysis of ultra-high-speed VLSI devices and tuning their electrical parameters.
- **February 1996 – February 1997:** Research Associate in the Departments of Electrical Engineering at Colorado State University (Fort Collins, Colorado, USA) and Texas Tech University (Lubbock, Texas, USA). Scientific research was focused on optical and electronic properties of Gallium (Aluminum) Nitride.
- **November 1991 – January 1992:** Research associate at the Max Planck Institute for Solid State Research and in the Physics Department of Leipzig University, Germany, investigating electronic properties of ternary chalcogenides.
- **1990 – January 1996:** Research Student in the Department of Materials & Interfaces of the Weizmann Institute of Science, Israel. Research was focused on investigation of ionic semiconductors. Ph.D. degree was awarded in 1996 upon acceptance of the thesis “Towards electric field-induced control over composition & properties of semiconductors at room temperature”.
- **1986 – 1990:** Device Engineer in Semiconductor Device Fabrication Plant, Lvov, Ukraine. Worked on electrical characterization of integrated semiconductor devices.

Recent and significant scientific products

1. **L. Chernyak**, R.E. Peale, C.J. Fredricksen, J. Lee (2021)
“Radiation defects mitigation in InAs/GaSb strained-layer superlattice infrared detectors and related methods”, U.S. Patent #11,054,312 B2.
2. S. Modak**, A. Schulte, **L. Chernyak**, A. Ruzin, E. Chikoidze, F. Ren, S. Pearton, Sergey S. Kosolobov, Denis M. Zhigunov, Vladimir P. Drachev (2022)
“Variable temperature EBIC and CL measurements of p-type Ga₂O₃ epitaxial layers”, *APL Materials*, **10**, 031106.
3. Sushrut Modak**, Alfons Schulte, Corinne Sartel, Vincent Sallet, Yves Dumont, Ekaterine Chikoidze, Xinyi Xia, Fan Ren, Stephen J. Pearton, Arie Ruzin, and **Leonid Chernyak** (2022)
“Impact of radiation and electron trapping on minority carrier transport in p-Ga₂O₃”, *Appl. Phys. Lett.*, **120**, 233503.
4. Sushrut Modak**, **Leonid Chernyak**, Alfons Schulte, Minghan Xian, Fan Ren, Stephen J. Pearton, Igor Lubomirsky, Arie Ruzin, Sergey S. Kosolobov, Vladimir P. Drachev (2021)
“Electron beam probing of non-equilibrium carrier dynamics in 18 MeV alpha particle- and 10 MeV proton-irradiated Si-doped β-Ga₂O₃ Schottky rectifiers”, *Appl. Phys. Lett.*, **118**, 202105.
5. Sushrut Modak**, **Leonid Chernyak**, Minghan Xian, Fan Ren, Stephen Pearton, Sergey Khodorov, Igor Lubomirsky, Arie Ruzin, and Zinovi Dashevsky (2020)
“Impact of Electron Injection on Carrier Transport and Recombination in Unintentionally Doped GaN”, *J. Appl. Phys.*, **128**, 085702.

** Graduate student.

Students graduated with a Ph.D. degree

1. Sushrut Modak, Ph.D., 2022
2. Jonathan Lee, Ph.D., 2018
3. Anupama Yadav, Ph.D., 2015
4. Casey Schwartz, Ph.D., 2011
5. Olena Lopatiuk, Ph.D., 2007
6. William Burdett, Ph.D., 2004

Other mentored graduate students

Rumyana Petrova; Hulya Atman; Sartaj Bhullar; Sherwin Solomon; Y. Lin; Leslie Davis; Sasha Berriel; Brian Ferrari.

Mentored undergraduate students

12 undergraduate students were mentored while at UCF.

Synergistic activities related to Graduate Education

- Chaired the industrial outreach committee in Physics Department, linking graduate students with potential industrial employers.
- Secured NSF industrial scholarship for Sushrut Modak, graduate student in my lab.
- Supervised 5 graduate students from underrepresented groups.