

FUTURE PHOTON INITIATIVE

rit photonics

The Future Photon Initiative

The Future Photon Initiative (FPI) develops photonic devices in pursuit of answers to grand questions, leveraging efforts of existing RIT research groups who develop technology for the generation, transmission, manipulation, absorption, and detection of photons. FPI cross-disciplinary teams collaborate with external university groups, industry, and national laboratories to develop and commercialize new photonic device technology. Potential markets include solar energy, biophotonics, high performance imaging, astrophysics, communication, electronics, and computing. For a full description of the Future Photon Initiative, visit our website.

FPI Groups

Center for Detectors
Integrated Photonics Group
NanoPower Research Lab
Nanolithography Research Lab
Semiconductor Microsystems Fabrication Lab
Photonic Systems Lab
Lab for Advanced Instrumentation Research
Semiconductor Photonics and Electronics
Group
Photonics and Optics Workforce Education
Simone Center for Innovation and
Entrepreneurship
Vignelli Center for Design Studies



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Research

Photovoltaics



One of the grand societal challenges today is sustaining our energy supply. Its resolution is vital to our nation's prosperity and security. Our strategy to make this outcome possible is to bring together a multi-disciplinary and multi-talented team of scientists and engineers with the demonstrated skill set and facilities for novel and nanoscale material synthesis and characterization to make breakthroughs that will advance the state-of-the-art in device efficiency and lower cost for the conversion of light to electrical energy. FPI members have excellent facilities and the scientific expertise necessary to exploit these novel materials systems.

Detectors



Research in this area is generally motivated by the desire to have more sensitive detectors, such as large-format imaging detectors that are essentially ideal. These devices enable a broad spectrum of science, some of the most interesting of which FPI. Two of the most exciting application areas for these devices are Astrophysics and Biophotonics.



Research

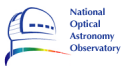
Integrated Photonics

Early photonic information technologies have had a tremendous impact on society. Photonics is driving a revolution by integrating optical devices on the CMOS Silicon platform, enabling densely integrated photonic circuits with impressive performance. FPI makes significant leaps through revolutionary advances in photon science and technology by inventing nanoscale devices and materials that are fundamentally quantum limited and integrated in silicon.



Scaled Electronics

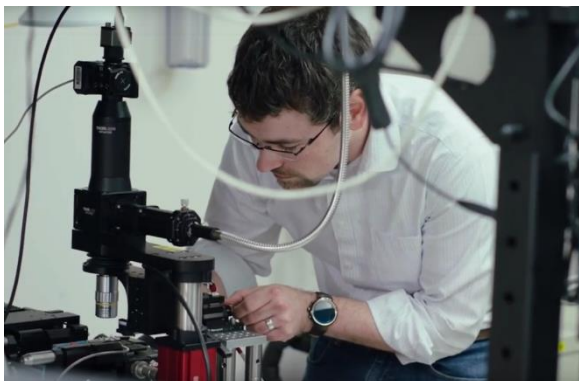
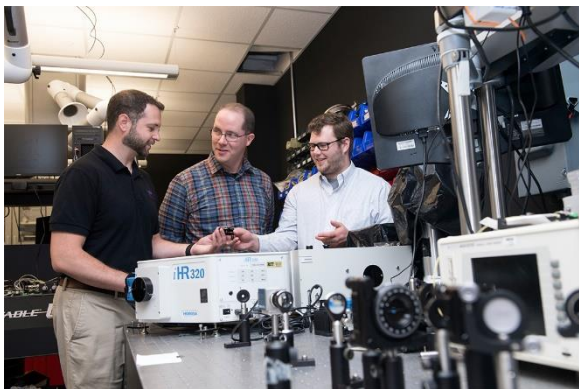
Advances in microelectronics have enabled the shrinking of semiconductor devices to the nanoscale. Scaling rules (as predicted by Moore's Law) have continued well below sizes smaller than the wavelength of light. Deep-UV (DUV) photons are now used to create patterns below 25 nm and smaller. Through advances pioneered at RIT, Moore's Law has been extended several generations. FPI recognizes that challenge for scaled electronics continues to be dimensional. Extending device generations beyond short-term projections continues to be driven by photonics.

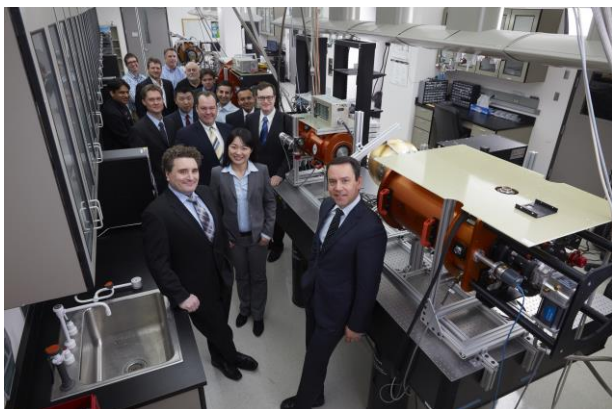


Industry Partnerships Program

IPP Members Gain Access

Collaborating with FPI researchers is easy with our Industry Partnerships Program. As a partner, you gain access to top-tier RIT talent and resources, including priority relationships with RIT PhD researchers and preferred access to staff and students from affiliated RIT colleges, such as the College of Science, Kate Gleason College of Engineering, Saunders College of Business, College of Imaging Arts and Sciences, and the College of Applied Science and Technology. FPI crafts specific agreements to suit the particular needs of each partnership.





Principals

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