

Technology Achievements of the CAT

The NYS Center for Advanced Technology in Photonics Applications at the City University of New York (CAT) was recently redesignated for 10 (ten) years of funding from the NYS Office of Science, Technology and Academic Research. Since its inception (1993), the CAT has leveraged this funding with industrial, federal and institutional support to accomplish its mission: to develop and disseminate knowledge in photonics technology to promote New York economic development for the medical, biological, industrial and military sectors.

The CAT has accomplished these goals by drawing on its outstanding and well recognized research and development capabilities in such areas as: optical medical diagnostic techniques, tunable solid state lasers, optical imaging, semiconductor growth and characterization, nanoscale photonic materials, and compact photonic devices. We briefly present a few of the technological contributions of the CAT program:

Cancer Detection and Diagnosis Using Minimally/Non-Invasive Optical Techniques.

Techniques include spectroscopic techniques for minimally invasive early detection of cervical, prostate, oral, gastrointestinal and skin cancers and breast cancer imaging technology that uses safe ultrafast lasers to see deep into the breast. The former technique has advanced to the stage where prototype instruments are being prepared for clinical trials. These efforts have been funded in part by Mediscience Technology Corp. and through \$1M in US Army research grants.

Detection of cracks and corrosion under paint. This work, funded in part by Lockheed Martin Corp., has led to prototype detection devices for use on airplane wings that are in the process of being brought to market.

Bacteria and Virus Detection for Homeland Defense. This technology, which recognizes spectroscopic signatures of bacteria and viruses, is funded in part by Northrop Grumman and NASA.

Compact Photonic Explorer. Funded in part by the NYS Infotonics Technology Center, we are developing a sophisticated "photonic pill" that can perform remote diagnostics in such places as the digestive tract and send information back to doctors – like the Mars explorer but nearby and on a smaller scale.

Contactless Characterization of Semiconductor Wafers. This technology led to a successful NYS spin-off company, Semiconductor Characterization Instruments, with cumulative sales of nearly \$4M and high-profile customers like TRW and Nortel.

CAT Success Story: "Titan" Optical Amplifier



The CAT collaborated with Quantronix (East Setauket) to develop the "Titan", a successful new laser. This ongoing line has led to over \$13M in sales and has created and retained over 45 engineering and sales jobs for Quantronix since 1999.