



Swapan K. Gayen

Associate Professor
Department of Physics
The City College of NY
138th St. & Convent Avenue
New York, NY 10031

Tel: (212) 650-5580, 5531 FAX: (212) 650-5530

Email: gayen@sci.cuny.edu

Education

University of Connecticut	Ph. D. Physics	1984
University of Dacca	M.Sc. Physics	1977
University of Dacca	B.Sc. Physics	1975

Professional Experience

Professor of Physics	The City College of NY	2001 - Present
Senior Member of Research Staff, IUSL	The City College of NY	1995 - 2001
Assistant Professor of Physics	Stevens Institute of Technology	1988 - 1995
Research Associate, IUSL	The City College of NY	1984 - 1988

Research Interests

Professor Gayen's research focuses on biomedical optical imaging and spectroscopic diagnostics, pulse propagation and optical imaging through turbid media and photo-physics of nanoscale materials and systems. Laser focus are in the areas of development and characterization of tunable solid-state lasers, ultrafast laser spectroscopy and nonlinear optical spectroscopy and optical and spectroscopic properties of impurity ion-doped solids.

Selected Publications

- *Two-photon excitation of the lowest $4f^2 \rightarrow 4f5d$ near-ultraviolet transitions in $Pr^{3+}:Y_3Al_5O_{12}$* , S. K. Gayen, Bin Qing Xie, and Y. M. Cheung, Phys. Rev. B 45, 20 (1992).
- *Optical nonlinearities of tea studied by the Z-scan and the four wave-mixing techniques*, Y. M. Cheung and S. K. Gayen, J. Opt. Soc. Am. B 11, 636 (1994).
- *Excited-state absorption in $Pr^{3+}:Y_3Al_5O_{12}$* , Y. M. Cheung and S. K. Gayen, Phys. Rev. B 49, 14 827 (1994).
- *Electronic-Raman-scattering study of the low-lying energy-levels of trivalent cerium-doped yttria*, G. S. Nolas, V. G. Tsoukala, S. K. Gayen, and Glen A. Slack, Phys. Rev. B 50, 150 (1994).
- *Site-selective electronic Raman excitation spectroscopy of the lowest $4f \rightarrow 5d$ transitions in $Ce^{3+}:Y_2O_3$* , G. S. Nolas, V. G. Tsoukala, S. K. Gayen, and Glen A. Slack, Opt. Lett. 19, 1574 (1994).

- *Induced-dichroism excited atomic line filter at 532 nm*, S. K. Gayen, R. I. Billmers, Guangning Yang, V. M. Contarino, M. F. Squicciarini, D. M. Alocca, W. J. Scharpf, and P. R. Herczfeld, *Opt. Lett.* 20, 1427 (1995).
- *Synthesis and nonlinear optical characterization of nanostructured gold/polymer composites and suspensions*, K. E. Gonsalves, G. Carlson, X. Chen, S. K. Gayen, R. Perez, M. Jose-Yacamán, *Nanostructured Materials* 7, 293 (1996).
- *A high-average-power, kilohertz-repetition-rate, sub-100-fs Ti:sapphire amplifier system*, Q. Fu, F. Seier, S. K. Gayen, and R. R. Alfano *Opt. Lett.* 22, 712 (1997).
- *Two-dimensional near-infrared transillumination imaging of biomedical media with a chromium-doped forsterite laser*, S. K. Gayen, M. E. Zevallos, M. Alrubaiee, J. M. Evans, and R. R. Alfano, *Appl. Opt.* 37, 5327 (1998).
- *Optical three-dimensional inverse image reconstruction of objects in turbid media from ultrafast time-sliced optical transmission measurements*, W. Cai, S. K. Gayen, M. Xu, M. Zevallos, M. Alrubaiee, M. Lax, and R. R. Alfano, *Appl. Opt.* 38, 4237 (1999).
- *Sensing lesions in tissues with light*, S. K. Gayen, R. R. Alfano, *Opt. Express* 4, 475 (1999).
- *Picosecond electronic time-gated imaging of bones in tissues*, M. Zevallos, S. K. Gayen, B. B. Das, M. Alrubaiee, R. R. Alfano, *J. Select. Topics Quantum Electron.* 5, 916 (1999)
- *Parotid gland tissues investigated by picosecond time-gated and spectroscopic imaging techniques*, S. K. Gayen, M. Alrubaiee, H. E. Savage, S. P. Schantz, and R. R. Alfano, *J. Select. Topics Quantum Electron.* 7, 906 (2001)
- *Cancerous and normal human tissues investigated by near-infrared time-resolved and spectroscopic imaging techniques*, M. Al-Rubaiee, S. K. Gayen, J. A. Koutcher, and R. R. Alfano, *SPIE* 4955, 199 (2003).

Selected Patents

- *Chromium-doped forsterite laser system*, R. R. Alfano, V. Petricevic, and S. K. Gayen, U. S. Patent Number: 4,932,031 awarded June 5, 1990
- *Excited-State Polarization Altering Filter*, R. I. Billmers, S. K. Gayen, and M. F. Squicciarini, U. S. Patent Number: 5,721,632 awarded February 24, 1998
- *Time-resolved diffusion tomographic 2D and 3D imaging in highly scattering turbid media*, R. R. Alfano, W. Cai, and S. K. Gayen, U. S. Patent Number: 6,108,576 awarded August 22, 2000
- *Spectroscopic and time-resolved optical methods and apparatus for imaging objects in turbid media*, R. R. Alfano, S. K. Gayen, and M. E. Zevallos, U. S. Patent Number: 6,665,557 B1 awarded December 16, 2003

Selected Grants

- Time-Resolved Optical Polarization Imaging for Underwater Target Detection, PI, Office of Naval Research, 3/03 - 6/06
- Nanoscale biomedical and laser photonics materials, Co-PI, New York State Office of Science, Technology and Academic Research (NYSTAR), 4/02 - 3/04
- Center for Optical Sensing and Imaging, Co-PI, NASA, 5/03 - 4/08
- Center for Nanoscale Photonic Emitters and Sensors for Military, Medical, and Commercial Applications, Co-PI, Department of Defense (DOD), 8/03 - 8/08