

SENIOR RESEARCH SCIENTIST

Professional Summary

<http://www2.chemistry.gatech.edu/solntsev> Senior Research Scientist A top-performing senior research scientist with proven track record of cutting edge, internationally recognized research and innovative thinking in photochemistry, spectroscopy, chemical kinetics, organic synthesis, fluorescent probes, fluorescent proteins function and design. Experienced proposal writer with more than \$1 M in federal funding for research projects and scientific reviewer/editor for high-ranked US and international scientific journals and funding agencies. Published 75 peer reviewed papers and 2 invention disclosures. Over 50 invited talks at North American, European, and Asian universities in the past decade.

Experience

Senior Research Scientist

January 2000 - Present Global 1/4 Plymouth, MN

group leader Principal Investigator

January 2011

- at the School of Chemistry and Biochemistry conducting research on supramolecular photochemistry, ultrafast reactions, fluorescent proteins design and utilization, shape-responsive fluorophores and fluorescence sensors.
- sect; Supervised, trained and coordinated the work (experiments design, data collection and analysis and paper writing) of 6 graduate and more than 20 undergraduate students, as well as US and international collaborators on more than 20 research projects.
- sect; Organized 3 international scientific conferences and served as Guest Editor of 2 special issues of scientific journals.

Research Scientist II

Exact Sciences 1/4 Wa, WA

- 2004 - 2010) sect; Co-PI on three NSF research grants (semi-independent position) sect; Initiated and conducted time-resolved FTIR, fluorescence, and transient absorption studies of Green Fluorescent Proteins (GFP) synthetic chromophores.
- Discovered new mechanisms of excited-state deactivation in these molecules.
- sect; Explored structure, photoreactivity, and phototoxicity of various fluorescent proteins.
- sect; Developed cruciform-based fluorescence probes allowing discrimination of various amines, organic acids, and metal ions based on multicolor fluorescence response.
- sect; Studied collapse and recovery of GFP chromophore emission through topological effects.
- sect; Produced nanofibers and nanocrystals of the GFP synthetic chromophores with the solid-state emission tunable in the whole visible range.
- sect; Developed unique "turn-on" fluorescence probes for selective determination of zinc and cadmium ions.
- sect; Established the unified solvatochromic mechanism of the absorption and emission spectral solvent dependence of novel photoacids.
- sect; Discovered the photomechanical effect in the crystalline GFP chromophores.
- Postdoctoral Fellow (2000 - 2003) sect; Synthesized novel photoacids, purified and characterized them with NMR, TLC, HPLC, X-ray crystallography, and GC/MS.
- Studied their photoinduced proton transfer reactions.
- sect; Clarified mechanisms of photodecomposition of several biologically active antibacterial drugs.
- HEBREW UNIVERSITY OF JERUSALEM AND TEL-AVIV UNIVERSITY, Israel 1996 - 2000 Postdoctoral Fellow sect; Established a unified mechanism of the fundamentally important diffusion-influenced excited-state proton transfer (ESPT) in a wide array of systems ranging from bulk solvents to microheterogeneous systems, gas phase, supercritical media, gas-expanded liquids, films, solid state, and proteins.
- The wide range of temperatures and pressures was applied to study the ESPT reaction dynamics.
- The common features and peculiarities of the structure-reactivity relationship for ESPT in homogeneous solutions and in surfactant assemblies were established.
- ETH, Zurich, Switzerland, KAUST, Saudi Arabia, 1993 - 2014 UNIVERSITY OF HELSINKI, Helsinki, Finland, and TEL AVIV UNIVERSITY, Israel Short-Term Invited Visiting Scientist sect; Discovered unique mode-selective charge transfer mechanism in GFP sect; Conducted studies of interactions of several diol epoxide carcinogens with DNA.
- sect; Utilized photochemistry of toxic organic compounds to probe their biological activity.
- sect; Synthesized and separated covalent adducts of diol epoxide carcinogens with DNA using HPLC.
- sect; Characterized ligand-protein complexes and protein photoadducts by using fluorescence spectroscopy, protein digestion and mass-spectrometry (MALDI, ESI).
- sect; Studied structure and reactivity of liposomes, microemulsions and micelles with NMR spectroscopy, dynamic light scattering, gel chromatography, and steady-state and time-resolved optical techniques.

Education

PhD, Chemical Kinetics and Catalysis, Moscow Lomonosov State University, Russia 1996 Dissertation title: "Kinetics of excited-state proton-transfer reactions of lipophilic hydroxyaromatic compounds in microheterogeneous systems". Supervisor: Michael G

Master of Science : Chemistry, 1991 Moscow Lomonosov State University Russia Chemistry

Professional Affiliations

American Chemical Society, European Photochemical Association, Inter-American Photochemical Association

Skills

conferences, data collection, Editor, features, FTIR, GC, grants, HEBREW, HPLC, 2000, NSF, NMR, novel, PhD, research, scientific, Supervisor, unique

Additional Information

- Citizenship: U.S. Citizen Awards & Distinctions: Numerous travel grants and lectureships (1996 - 2014) Skanska Foundation post

- Citizenship U.S. Citizen Awards & Distinctions Numerous travel grants and lectureships (1996 to 2014) Shapiro Foundation post-doctoral fellowship, Israel (1999) Post-doctoral fellowship from the Ministry of Higher Education, Israel (1996)