

Curriculum Vitae

Name: David Groswasser
Address: Ramat-Gan, Israel
E-mail: davgros@bgu.ac.il
Nationality: Israeli



Languages: Hebrew (Mother tongue), English (Fluent), French (Basic).

Professional experience:

(2003-present) – Phys. Dept. Ben-Gurion University. Research in Quantum Technology.

Fields of interest: Matter Wave Quantum Technology and Lasers. Specific projects: cooling, trapping and manipulation of ultracold atoms and Bose-Einstein Condensates (BEC) on *atomchips*. Atom clocks, Atomic magnetometers, Atomic interferometry with ultra cold atoms. Design and construction of narrow line-width diode lasers, Raman laser for quantum bit manipulation, cryogenic experiment for the study of decoherence. Further aspects of my practice include *nanofabrication* issues. In addition, my responsibilities involve management of a large research team including research programs, budgets, manpower, research proposals, reports and more.

Collaboration with Dr. Anne Bernheim Groswasser from the Chem. Eng. Dept. of the Ben-Gurion University.

Investigation of dynamical and mechanical properties of the cell cytoskeleton using novel *in vitro* model systems. Design and construction of an optical tweezer set-up for single molecule manipulation.

Post-doctoral experience:

(2000-2001) - “Laboratoire de photophysique moléculaire” (LPPM), Université Paris-Sud, France.

Post-doctoral research on: “*Photophysics, Dynamics and Reactivity of Molecular Clusters*”.

Reaction dynamics in molecular clusters taking place at pico and nano-second time scales in supersonic beams. The experimental techniques applied included: Resonance enhanced multi-photon ionization mass spectrometry (REMPI) by ns-ps pulsed lasers in the IR-UV range, Laser Induced Fluorescence (LIF) and Dispersed Fluorescence (DF).

(1999-2000) - Faculty of Chemistry, The Technion - Israel Institute Of Technology.

Post-doctoral research on: “*Single Bubble Sonoluminescence (SBSL)*”. Design and construction of a SBSL experiment, measurements pico-second UV-IR light pulses from a single air bubble trapped in an ultrasonic field. Experimental methods: dynamic light scattering (Mie).

Academic Education:

(1995-1999) - Ph.D in Chemistry, Faculty of Chemistry, Technion.

Thesis title: *"The Photophysics of Naphthalene Bichromophoric Molecules and Clusters in Supersonic Jets"*.

Supervisor: Prof. S. Speiser

Experimental study of *Electronic energy transfer* and *electron transfer* in "cold" molecular systems in a molecular beams.

(1992-1994) - M.Sc. in Chemistry, Faculty of Chemistry, Technion.

Thesis Title: *"Molecular Systems with Nonlinear Optical Properties"*.

Supervisors: Prof. S. Speiser (Chem. Dept.), Prof. M. Orenstein (EE Dept.).

(1989-1991) - B.Sc. in Chemistry, Department of Chemistry, Tel-Aviv university.

Teaching Experience:

Advisor of many final year projects in Physics and Electronic Engineering. Teaching Physical Chemistry courses.

(1985-1988) – Military service.

Professional Fields of Interest:

Matter Waves Quantum Technology, Optics and Lasers, Nanotechnology, Nonlinear Optics. Spectroscopy, Optical Magnetometry, Molecular-Dynamics and Reactivity. Sonoluminescence, Biophysics, Metrology.

Professional and Theoretical Experience (hands on and supervision):

- Design and construction of complex experimental setups including: "Magneto Optical Trap (MOT)" and a complete "Bose Einstein Condensation" (BEC) experiment on atomchip. Time of Flight Mass Spectrometer", "Laser Induced Fluorescence", "Dispersed Fluorescence", Dynamic Light Scattering", "Sonoluminescence", "Optical Tweezer" and more...
- High resolution molecular and atomic spectroscopy
- Ultrafast dynamics studies using Multi Photon Ionization schemes and Fluorescence decay measurements.
- Advanced and conventional spectrophotometry and fluorometry techniques.
- Extensive practical (including building) and theoretical experience with various continuous and pulsed laser systems in the UV - IR range, such as: Nd:Yag, DPSS, Excimer, Ti:Saph, Dye, OPO, external cavity diode lasers, VCSEL's.
- Wide experience with vacuum techniques.
- Molecular Beams.
- Dynamic light scattering.
- Numerical simulations.

Management:

Experience in manpower and financial management aspects of a large research team. Good public relations skills and numerous presentations for visitors and investors. Very skilled in composing research applications, scientific publications and reports.

Programming: Matlab, Fortran, LabView.

List of Publications:

1. Groswasser, D., and Speiser, S., "Nonlinear Optical Properties of Phenosafranin Polymer-Dye", Nonlinear optics **11**, 319 (1995).
2. Groswasser, D., Ornstein, M., and Speiser, S., "Propagation Methods for the Analysis of Bistable Devices and Optical Fibers Based on Nonlinear Molecular Media", Nonlinear optics **11**, 99 (1995).
3. Rosenblum, G., Schael, F., Groswasser, D., Rubin, M., and Speiser, S., "Electronic Energy Transfer in Supersonic Jet Expanded Naphthalene-(CH₂)-Anthracene Bichromophoric Molecules" Chem. Phys. Lett. **263**, 441 (1996).
4. Speiser, Shammai, Groswasser, David, Orenstein, Meir. "Propagation methods for the analysis of bistable devices and spatial light modulators based on nonlinear molecular media" Proceedings of SPIE-The International Society for Optical Engineering (1993), 2000 (Current Developments in Optical Design and Optical Engineering III), 279-88.
5. Groswasser, D., and Speiser, S., "Laser Induced Fluorescence Excitation Spectroscopy and Photophysics of Naphthalene Bichromophoric Molecules in Supersonic Jets" Journal of Fluorescence **10**, 113, (2000).
6. Dedonder-Lardeux, C., Groswasser, D., Jouvet, C., "Excited State Proton Transfer in 1-naphthol-(NH₃)_n clusters". Physical Chemistry Chemical Physics (PCCP) **3**, (19), 4316 (2001).
7. Dedonder-Lardeux, C., Groswasser, D., Jouvet, C., S Martenchar, "Dissociative Hydrogen Transfer in Indole-(NH₃)_n clusters", Phys. Chem. Comm. **4**, 2, (2001).
8. Groswasser, David; Rosenblum, Gershon; Speiser, Shammai. "Supersonic jet spectroscopy of naphthalene-fluorene bichromophoric cluster" Journal of Photochemistry and Photobiology, A: Chemistry, 150(1-3), 159-165, (2002).
9. Groswasser, David; Rosenblum, Gershon; Stanger, Amnon; Speiser, Shammai. "Laser-induced fluorescence excitation spectra of 1,4-Di(1-naphthyl)propane and 1-butyl-naphthalene in a supersonic jet" Journal of Luminescence , **102-103**, 273-277, (2003).
10. Groswasser, D., Dedonder-Lardeux, C., Jouvet, C. "Ground State Proton Transfer and Excited State Hydrogen Transfer in o-fluorophenol-(NH₃)_n clusters". (In preparation).
11. Groswasser, D., Dedonder-Lardeux, C., Jouvet, C. "Excited state dynamics in Catechol-(NH₃)_n clusters". (In preparation).
12. F. Backouche, L. Haviv, D. Groswasser, and A. Bernheim-Groswasser, "Active gels: dynamics of patterning and self-organization", Physical Biology **3**, 264 (2006). Including cover page.
13. A. Waxman, M. Givon, G. Aviv, D. Groswasser, R. Folman "Modulation enhancement of a laser diode in an external cavity", Applied Physics B **95**, 301-305 (2009).
14. D. Groswasser, A. Waxman, M. Givon, G. Aviv, Y. Japha, M. Keil, R. Folman, "Retro-reflecting polarization spectroscopy enabling miniaturization", Rev. Sci. Instrum. **80**, 093103 (2009).
15. "Dual Frequency Cavity Resonator for Atomic Manipulation and Spectroscopy", I. Gurman, Y. Soreq, R. Shavi, M. Givon, G. Aviv, D. Groswasser and R. Folman, IEEE COMCAS (2009).

Patents:

1. Retro reflecting polarization spectroscopy.
2. Enhancement of diode laser modulation.