

# *Curriculum Vitae*

## **Eyal Nir**

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### **Academic Background**

- 2008 – Present:** **Tenure-track:** Chemistry Department, Ben-Gurion University of the Negev, Beer-Sheva, Israel
- 2003 – 2008:** **Post-doctorate:** Advisor Prof. Shimon Weiss, Chemistry & Biochemistry Department, University of California, Los-Angeles, USA
- 1999 – 2003:** **Doctorate studies:** Advisor Prof. Mattanjah de Vries, Physical Chemistry Department, Hebrew University Jerusalem Israel
- 2001 – 2002:** **Continue doctorate studies:** Chemistry Department, University of California Santa Barbara, USA
- 2001:** **Visiting Scientist:** at Prof. Karl's Kleinermanns group, Physical Chemistry Department, Heinrich-Heine University, Düsseldorf, Germany
- 1997 – 1999:** **M.Sc.:** Advisor Prof. Mattanjah de Vries, Physical Chemistry Department, Hebrew University Jerusalem, Israel
- 1994 – 1997:** **B.Sc.:** Department of Chemistry, Hebrew University Jerusalem Israel

### **Publication**

#### **Papers**

1. Nir, E., Grace, L., Brauer, B. & de Vries, M. S. (1999). REMPI spectroscopy of jet-cooled guanine. *Journal of the American Chemical Society* **121**, 4896-4897.
2. Nir, E., Hunziker, H. E. & de Vries, M. S. (1999). Fragment-free mass spectrometric analysis with jet cooling VUV photoionisation. *Analytical Chemistry* **71**, 1674-1678.
3. Cohen, R., Brauer, B., Nir, E., Grace, L. & de Vries, M. S. (2000). Resonance-enhanced multiphoton ionization spectroscopy of dipeptides. *Journal of Physical Chemistry A* **104**, 6351-6355.
4. Nir, E., Imhof, P., Kleinermanns, K. & de Vries, M. S. (2000). REMPI spectroscopy of laser desorbed guanosines. *Journal of the American Chemical Society* **122**, 8091-8092.
5. Nir, E., Kleinermanns, K. & de Vries, M. S. (2000). Pairing of isolated nucleic-acid bases in the absence of the DNA backbone. *Nature* **408**, 949-951.
6. Nir, E., Janzen, C., Imhof, P., Kleinermanns, K. & de Vries, M. S. (2001). Guanine tautomerism revealed by UV-UV and IR-UV hole burning spectroscopy. *Journal of Chemical Physics* **115**, 4604-4611.
7. Nir, E., Kleinermanns, K., Grace, L. & de Vries, M. S. (2001). On the photochemistry of purine nucleobases. *Journal of Physical Chemistry A* **105**, 5106-5110.
8. Plutzer, C., Nir, E., de Vries, M. S. & Kleinermanns, K. (2001). IR-UV double-resonance spectroscopy of the nucleobase adenine. *Physical Chemistry Chemical Physics* **3**, 5466-5469.

9. Nir, E. & de Vries, M. S. (2002). Fragmentation of laser-desorbed 9-substituted adenines. *International Journal of Mass Spectrometry* **219**, 133-138.
10. Nir, E., Janzen, C., Imhof, P., Kleinermanns, K. & de Vries, M. S. (2002). Pairing of the nucleobases guanine and cytosine in the gas phase studied by IR-UV double-resonance spectroscopy and ab initio calculations. *Physical Chemistry Chemical Physics* **4**, 732-739.
11. Nir, E., Janzen, C., Imhof, P., Kleinermanns, K. & de Vries, M. S. (2002). Pairing of the nucleobase guanine studied by IR-UV double-resonance spectroscopy and ab initio calculations. *Physical Chemistry Chemical Physics* **4**, 740-750.
12. Nir, E., Muller, M., Grace, L. I. & de Vries, M. S. (2002). REMPI spectroscopy of cytosine. *Chemical Physics Letters* **355**, 59-64.
13. Nir, E., Plutzer, C., Kleinermanns, K. & de Vries, M. (2002). Properties of isolated DNA bases, base pairs and nucleosides examined by laser spectroscopy. *European Physical Journal D* **20**, 317-329.
14. Nir, E., Hunig, I., Kleinermanns, K. & de Vries, M. S. (2003). The nucleobase cytosine and the cytosine dimer investigated by double resonance laser spectroscopy and ab initio calculations. *Physical Chemistry Chemical Physics* **5**, 4780-4785.
15. Plutzer, C., Hunig, I., Kleinermanns, K., Nir, E. & de Vries, M. S. (2003). Pairing of isolated nucleobases: Double resonance laser spectroscopy of adenine-thymine. *Chemphyschem* **4**, 838-842.
16. Nir, E., Hunig, I., Kleinermanns, K. & de Vries, M. S. (2004). Conformers of guanosines and their vibrations in the electronic ground and excited states, as revealed by double-resonance spectroscopy and ab initio calculations. *Chemphyschem* **5**, 131-137.
17. Abo-Riziq, A., Grace, L., Nir, E., Kabelac, M., Hobza, P. & de Vries, M. S. (2005). Photochemical selectivity in guanine-cytosine base-pair structures. *Proceedings of the National Academy of Sciences of the United States of America* **102**, 20-23.
18. Jager, M., Nir, E. & Weiss, S. (2006). Site-specific labeling of proteins for single-molecule FRET by combining chemical and enzymatic modification. *Protein Science* **15**, 640-646.
19. Nir, E., Michalet, X., Hamadani, K. M., Laurence, T. A., Neuhauser, D., Kovchegov, Y. & Weiss, S. (2006). Shot-noise limited single-molecule FRET histograms: Comparison between theory and experiments. *Journal of Physical Chemistry B* **110**, 22103-22124.
20. Kong, X. X., Nir, E., Hamadani, K. & Weiss, S. (2007). Photobleaching pathways in single-molecule FRET experiments. *Journal of the American Chemical Society* **129**, 4643-4654.
21. Majumdar, D. S., Smirnova, I., Kasho, V., Nir, E., Kong, X. X., Weiss, S. & Kaback, H. R. (2007). Single-molecule FRET reveals sugar-induced conformational dynamics in LacY. *Proceedings of the National Academy of Sciences of the United States of America* **104**, 12640-12645.
22. Kovchegov, Y., Meredith, N. & Nir, E. (2010). Occupation times and Bessel densities. *Statistics & Probability Letters* **80**, 104-110.
23. **Accepted to *Biophysical Journal***: Tomov, T.E., Tsukanov, R., Masoud, R., Liber, M., Plavner, N., & Nir, E. Disentangling subpopulations in single-molecule FRET and ALEX experiments with photon distribution analysis.

## **Books Chapter**

1. Nir E, Jager M, Weiss S. Alternating Laser Excitation spectroscopy of freely diffusing single molecule: application to bio-molecular structure, dynamics and interaction. Chapter 2 in "Nano Biophotonics" volume 3, ELSEVIER. (Masuhara H, Kawata S and Tokunaga F, Eds.). <http://www.sciencedirect.com/science/article/pii/S1574064107800076>

2. Kapanidis AN, Heilemann, Margeat E, Kong X, Nir E, Weiss S. Alternating-laser excitation of single molecules. Chapter 2 in "Laboratory manual for single-molecule studies", CSHL Press, Cold Spring Harbor, NY (Taekjip Ha and Paul Selvin, Eds).  
[http://www.cshlpress.com/default.tpl?cart=1321981691421086774&fromlink=T&linkaction=full&linksortby=oop\\_title&--eqSKUdatarq=642](http://www.cshlpress.com/default.tpl?cart=1321981691421086774&fromlink=T&linkaction=full&linksortby=oop_title&--eqSKUdatarq=642)

## Awards and Grants

- **Intel-Dean Prize** for Excellent Ph.D. research, 2000, Hebrew University (4000\$)
- **DFG** (Deutsche Forschungsgemeinschaft), 1999-2002, Ph.D. Fellowship (~45,000\$)
- **HFSP** (Human Frontier Science Program), 2003-2006, Post-doctorate Fellowship (~150,000\$)
- **ALON Fellowship**, 2009, Young Faculty in Israel (~230,000\$)

## Conferences

1. **Isolated Molecules of Biological Interest**, Düsseldorf Germany, 06/2001, (Poster)
2. **Molecular & Ionic Clusters**, Gordon conference, Ventura, CA, 01/2002, (Poster)
3. **Ion Chemistry and Mass Spectrometry**, Lake Arrowhead, CA, 01/2002, (Talk)
4. **Protein Folding Dynamics**, Gordon conference, Ventura, CA, 01/2004
5. **Spectroscopy of Biomolecular Dynamics**, Kloster Banz, Germany, 03/2004, (Poster)
6. **227<sup>th</sup> ACS National Meeting**, Anaheim, CA, USA, 03/2004, (Poster)
7. **228<sup>th</sup> ACS National Meeting**, Philadelphia, PA, USA, 08/2004, (Poster)
8. **49<sup>th</sup> Biophysical Society**, Long-Beach, CA, USA, 02/2005, (Poster)
9. **229<sup>TH</sup> ACS National Meeting**, San Diego CA USA, 03/2005, (Poster)
10. **5<sup>th</sup> EBSA international Biophysics congress**, Montpellier, France, 09/2005. (Poster)
11. **50<sup>th</sup> Biophysical Society**, Salt-Lake, Utah, USA, 02/2006, (Talk)
12. **Optical Spectroscopy of Bimolecular Dynamics II**, Eilat, Israel, 03/2006, (Talk)
13. **Frontiers in Chemical Biology**, Single Molecules, Cambridge, UK, 03/2006, (Poster)
14. **Single Molecule workshop**, PicoQuant, Berlin, Germany, 09/2007, (**Key Note Speaker**)
15. **52<sup>th</sup> Biophysical Society**, Long-Beach, CA, USA, 02/2008, (Talk)
16. **The 74<sup>th</sup> Meeting of the Israeli Chemical Society**, Tel-Aviv, Israel, 02/2009
17. **Symposium in Chemical Physics**, Biological Soft Matter, Tel-Aviv, Israel, 06/2009
18. **Nanolsrael 2010**, Tel-Aviv, Israel, 11/2010
19. **The 76<sup>th</sup> Israeli Chemical Society**, Tel-Aviv, Israel, 01/2011, (**Invited Talk**)
20. **The 17<sup>th</sup> Single Molecule workshop**, PicoQuant, Berlin, Germany, 09/2011, (**Talk**)
21. **The Israeli Biophysical Society**, Tel-Aviv, Israel 10/2011, (**Invited Talk**)

## Teaching Experience

1. Principle lecturer, Physical Chemistry I and II (Thermodynamics, Kinetics, Molecular-mechanics)
2. Principle lecturer, Soft-Matter and Biophysics (Biomolecular dynamics and single-molecule fluorescence methods)
3. Principle instructor, Physical Chemistry lab I and II
4. Teaching assistant, Physical Chemistry lab

## Other Fields of Interest

Human Sciences, Traveling, Cultures, Environment, Education, Activisms.