

Curriculum Vitae

Amir Goldbourn, Ph.D.

Associate Professor

Raymond and Beverly Sackler faculty of Exact Sciences, school of chemistry

Tel Aviv University

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Born in Israel, 09/05/1970

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Last update 05-01-2019

A. EDUCATION

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|---------------------|---|---|
| Oct 1993 – Jul 1996 | Bs.C in Tel-Aviv University, Tel-Aviv, ISRAEL. | Chemistry (major) and Computer science |
| Oct 1996 – Aug 2003 | Ph.D at the Chemistry Department, Weizmann Institute of Science, Rehovot, ISRAEL.
Title of dissertation: “Quadrupolar Nuclei in Solid State NMR: Sensitivity enhancements and distance measurements”
Awarded: 30/12/2003 | Supervisor:
Professor Shimon Vega |

B. ACADEMIC AND PROFESSIONAL EXPERIENCE

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| Sep 2003 – May 2004 | Post Doctorate at the Chemistry Department, Weizmann Institute of Science, Rehovot, ISRAEL.
Subject: Solid state NMR | Advisor: Professor Shimon Vega |
| Jun 2004 – Aug 2007 | Post Doctorate at the Chemistry Department, Columbia University, New York, NY, USA.
Subject: Biomolecular solid-state NMR | Advisor:
Professor Ann E. McDermott |
| Oct 2007 – Jun 2013 | Senior Lecturer , Sackler faculty of Exact Sciences, School of Chemistry, Tel Aviv University, Tel Aviv, ISRAEL | |
| May-2015 – | Associate Professor , Sackler faculty of Exact Sciences, School of Chemistry, Tel Aviv University, Tel Aviv, ISRAEL | |

FIELDS OF INTEREST

The group is developing and applying magic angle spinning solid-state NMR methods to study bio-macromolecules, macromolecular assemblies and metal-containing materials.

- Inspired by the role that metal ions play in enzymes, we develop and study techniques to qualitatively and quantitatively obtain structural information using the dipolar interaction between NMR active spin-pairs, and especially nuclei with spins $> \frac{1}{2}$ that possess a quadrupolar interaction or spin-1/2 nuclei with large chemical shift anisotropies. Examples are ^{23}Na , ^7Li , ^{25}Mg , ^{207}Pb , ^{195}Pt , ^{79}Br , and more.
- We apply and develop methods to study crystalline and non-crystalline biological macromolecules such as proteins, enzymes and viruses with special emphasis on (i) enzymes related to psychiatric diseases such as bipolar disorder; (ii) bacteriophage viruses, which have applications ranging from nano-material fabrication to phage display and phage therapy; (iii) protein filaments associated with viral infection; (iv) cellulose binding proteins.
- We develop and apply general methods to obtain their structure and dynamics by magic-angle spinning solid-state NMR.

C. ACTIVE PARTICIPATION IN SCIENTIFIC MEETINGS

Contributed and Invited Lectures:

1. A. Goldbourn and S. Vega, “ ^{27}Al MQMAS NMR of inorganic solids” Minerva Student School on Molecular, Interfacial and Biological Aspects of Mesostructures, Rehovot and Mashabei-Sade, Israel, Apr 1-4, 2001.
2. A. Goldbourn and S. Vega “Sensitivity enhancement in MQMAS solid state NMR of quadrupolar nuclei: Alumina graphing in MCM-41”, ISMAR conference, Rhodes, Greece, Aug 19, 2001.

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3. A. Goldbourn, L.A. Day and A.E. McDermott, ”Conformation, local polymorphism and phase transition in Pfl filamentous phage as viewed by MAS Solid State NMR”, Polish-Israeli NMR workshop, Weizmann Institute of Science, Rehovot, Israel, Dec 3-5, 2007. (Invited)
4. A. Goldbourn, “solid-state NMR of filamentous viruses” 74th meeting of the Israel Chemical Society, Tel-Aviv, Israel, February 8-9, 2009. (Invited)
5. A. Goldbourn, L.A. Day and A.E. McDermott, Gili Abramov, Omri Morag, “NMR of filamentous bacteriophage viruses: The phase transition in Pfl and initial studies of fd & M13”, 6th alpine conference on Solid-state NMR, Chamonix-Mont Blanc, France, Sep 13-17, 2009.
6. E. Nimerovsky & A. Goldbourn, “Efficient rotational echo double resonance recoupling between a spin-1/2 and a quadrupolar spin at high spinning rates and weak irradiation fields”, 52nd Rocky mountain conference on analytical chemistry, Snowmass, Colorado, USA, Aug.1-5, 2010.
7. A. Goldbourn, “Studying local interactions in complex systems by magic-angle spinning solid-state NMR”, 7th meeting of the Center for Nanoscience & Nanotechnology in Tel Aviv University, Ha’Goshrim, Feb 1-3, 2011.
8. A. Goldbourn, “Probing structure (and dynamics) with magic-angle spinning NMR – from single bonds to intact viruses”, Chemical Physics Symposium, May 15th, 2011. (Invited)
9. A. Goldbourn, (Gitte Vold Memorial Prize Lecture) “Recoupling of Heteronuclear Dipolar Interaction Using Non-Adiabatic, Low-Amplitude RF Fields: Theory and Applications to a Spin-1/2 Paired With Any Non-Integer Spin”, 7th alpine conference on Solid-state NMR, Chamonix-Mont Blanc, France, Sep 11-15, 2011.
10. A. Goldbourn, “Magic angle spinning NMR studies of filamentous bacteriophage viruses”, Symposium on New Developments in NMR and Conference of the National Magnetic Resonance Society, Bangalore, India, Feb 5-8, 2012. (Invited)

11. A. Goldbourn, Uzi Eliav, Anat Haimovich, "Determination of the Lithium Binding Site in Inositol Monophosphatase, the Putative Target of Lithium therapy, by Magic Angle Spinning Solid State NMR", 54th Rocky mountain conference on analytical chemistry, Copper mountain, Colorado, USA, Jul 15-19, 2012.
12. A. Goldbourn, "Structural Insights on Bacteriophage Viruses from Solid State NMR", 78th meeting of the Israel Chemical Society, Tel-Aviv, Israel, February 12-13, 2013.(Invited)
13. A. Goldbourn, "Magic angle spinning NMR studies of intact bacteriophage viruses", EUROMAR 2013, Hersonissos, Crete, Greece, Jun-30 – Jul-5.
14. A. Goldbourn, " NMR studies of bacteriophage viruses - capsid structure, DNA, and their interface", 8th alpine conference on Solid-state NMR, Chamonix-Mont Blanc, France, Sep 8-12, 2013.
15. A. Goldbourn, "Atomic-resolution structure determination of an intact filamentous virus by magic-angle spinning solid-state NMR", The 5th annual meeting of the Israel Biophysical Society, Sep 30, 2013, Jerusalem.(Invited)
16. A. Goldbourn, "High-resolution structure of the filamentous virus M13 capsid, its DNA properties, and their interface, revealed by solid-state NMR", National Magnetic Resonance Society Symposium (NMRS-2014), Tezpur University, Tezpur, Assam, India, Feb 2-5, 2014. (Invited)
17. O. Morag, N. Sgourakis, D. Baker, A. Goldbourn, "Capsid model of the M13 filamentous bacteriophage virus from magic-angle spinning NMR and Rosetta modeling", EMBO workshop on Magnetic resonance for cellular structural biology, Grosseto, Italy, Jun 1-6, 2014
18. A. Goldbourn, E. Nimerovsky, "Structural Information on Quadrupolar/spin-1/2 pairs Obtained by Phase Modulated Pulses", Rocky Mountain Conference on Magnetic Resonance, Copper mountain, Colorado, USA, Jul 13-17, 2014.
19. A. Goldbourn, "Atomic resolution structure of a bacteriophage virus", TAU-NYU meeting: Frontiers in Polymer and Biomolecular Chemistry, Tel Aviv University, Mar 2-4, 2015.(Invited)
20. A. Goldbourn, " MAS NMR as a robust tool to study biomolecules: The structure of M13 bacteriophage virus", Department of structural biology seminar, Weizmann institute of Science, Rehovot, Mar 24, 2015.
21. A. Goldbourn, " MAS NMR as a robust tool to study biomolecules: The structure of M13 bacteriophage virus", 56th ENC meeting, Asilomar, Pacific grove, CA, Apr 19-25, 2015.
22. A. Goldbourn, E. Nimerovsky, "Distance measurements in MAS NMR using phase modulated pulses: theoretical insights, difficult spins and a small trick for a spin-1", EUROMAR2015 Congress, Prague, Czech Republic, Jul 5-10, 2015.(Invited)
23. A. Goldbourn, "Distance measurements in mas NMR using phase modulated pulses: theoretical insights, difficult spins", ISMAR meeting, Shanghai, China, Aug 15-21, 2015.
24. A. Goldbourn, "Structural virology of Filamentous Bacteriophages – How a single coat protein mutation affects three length scales", An International Symposium on Recent Advances in Biomolecular NMR Spectroscopy, University of Michigan, Ann Arbor, MI, USA, Apr 16-17, 2016. (Invited)
25. A. Goldbourn, "Molecular structure from MAS NMR: The small (spin-pair) and the large (virus)", The Israeli 2016 Magnetic Resonance Meeting, Jun 21-22, 2016, Weizmann Institute of Science, Rehovot, Israel.
26. A. Goldbourn, "Structural virology of filamentous bacteriophages: The effect of a single coat protein mutation through three length scales", Rocky Mountain Conference, 17-21 Jul, 2016, Breckenridge, CO, USA.
27. A. Goldbourn, "Structural virology of filamentous bacteriophages: The effect of a single coat protein mutation through three length scales", ICMRBS (international conference on magnetic resonance in biological systems), Kyoto, Japan, 21-25 Aug 2016.
28. A. Goldbourn, "Phage structure determination by MAS NMR and SAXS: The effect of a single coat protein mutation through three length scales", 82nd meeting of the Israel Chemical Society, 13-14 Feb 2017.
29. A. Goldbourn, "MAS NMR and SAXS reveal structural effects of single phage mutation across multiple length scales " 7th Asia-pacific NMR and 23rd NMRS joint meeting, Bangalore, India, 16-19 Feb 2017.
30. A. Goldbourn, "structural effects of single mutations in a filamentous viral capsids across multiple length scales", Tel-Aviv-Postdam minisymposium on nano-bio-physics, Tel Aviv University, 13 March 2017.
31. A. Goldbourn, "Dynamics and structure of biomolecular complexes studied by Magic-angle spinning NMR", TAU-UP workshop on nano-bio-physics, Potsdam University, 17 Nov 2017.
32. A. Goldbourn, "utilizing phase modulated saturation pulses to obtain distance and relaxation of quadrupolar spins subjected to extensively large quadrupolar frequencies", EUROMAR 2018, 1-5 Jul, Nantes, France.

33. A. Goldbourt, "Developments in solid-state NMR of quadrupolar spins – Larger couplings, Faster spinning". The 2018 Israeli Magnetic Resonance Society Meeting, Oct 9th, 2018, Bar Ilan University.

Posters:

34. A. Goldbourt and Shimon Vega, Netherlands-Israel Meeting, Molecular Avenues in Material and Surface Science, "Multiple-quantum magic-angle-spinning of nano- and micro-sized zeolite- β " University of Twente (The Netherlands) October 23-25, 2000.
35. A. Goldbourt and S. Vega "Sensitivity enhancement in 5QMAS NMR of quadrupolar nuclei: Applications to ^{27}Al NMR", 2nd Alpine Conference on Solid-State NMR, Chamonix-Mont Blanc, France, Sep 9-13, 2001.
36. A. Goldbourt and S. Vega "High-Resolution Solid State NMR and Quadrupolar Nuclei: Sensitivity Enhancement Techniques and Applications", 67th meeting of the Israel Chemical Society, Jerusalem, Jan 29-30, 2002.
37. A. Goldbourt, E. Vinogradov, G. Goobes and S. Vega "2D Correlation Spectroscopy Between Quadrupolar Nuclei and Protons in Solids Using W-PMLG", 16th European Experimental Nuclear Magnetic Resonance Conference, Prague, Jun 9-14, 2002.
38. A. Goldbourt, M. Talianker and S. Vega "Inhomogeneous distribution of Al sites in nano-zeolite β as probed by ^{27}Al 5QMAS NMR", 6th International Conference on Magnetic Resonance in Porous Media Conference, Ulm, Germany, Sep 9-12, 2002.
39. A. Goldbourt, M. Landau and S. Vega "Probing the enhanced catalytic activity of mesoporous materials by means of high-resolution solid-state NMR", 68th meeting of the Israel Chemical Society, Tel Aviv, Jan 26-27, 2003.
40. A. Goldbourt, Y. Xu and A.E. McDermott "Solid State NMR studies on Bcl-xL, a 181 Residue-long all-helical Protein", 47th Rocky mountain conference, symposium on NMR, Denver, CO., Aug. 1-4, 2005.
41. A. Goldbourt, B.J. Gross, L.A. Day and A.E. McDermott "Magic-Angle Spinning Solid State NMR Studies of Intact Virus: Assignment of the coat protein in Pf1 Filamentous Phage", 47th Experimental NMR Conference (ENC), Asilomar, CA, Apr 23-29, 2006.
42. A. Goldbourt, B.J. Gross, L.A. Day and A.E. McDermott "Magic-Angle Spinning Solid State NMR Studies of Intact Virus: Assignment of the coat protein in Pf1 Filamentous Phage", New York Structural Biology Discussion Group, Cold Spring Harbor, New York, Jul 19 2006.
43. A. Goldbourt, B.J. Gross, L.A. Day and A.E. McDermott "The conformation, oligomeric state and phase transition in intact Pf1 filamentous phage virus", International Symposium and Workshop on NMR of Metals in Biological Systems and Materials, University of Delaware, June 8-10, 2007.

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44. A. Goldbourt, L.A. Day and A.E. McDermott, "The conformation, symmetry and phase transition in intact Pf1 filamentous phage virus" 73rd meeting of the Israel Chemical Society, Jerusalem, Israel, February 4-5, 2008.
45. A. Goldbourt, L.A. Day and A.E. McDermott, "The phase transition in intact Pf1 filamentous phage virus: A MAS NMR study", 50th Rocky mountain conference on analytical chemistry, Breckenridge, Colorado, USA, Jul. 27-31, 2008.
46. A. Goldbourt, "Magic angle spinning NMR studies of class-I and class-II intact filamentous bacteriophage viruses", EUROMAR, Jul 4-9, 2010 & 52nd Rocky mountain conference on analytical chemistry, Snowmass, Colorado, USA, Aug.1-5, 2010.
47. A. Goldbourt, Omry Morag, Gili Abramov, "Similarities and differences within the Ff family of filamentous bacteriophage viruses", Annual meeting of the Israel Biophysical Society, Weizmann Institute of Science, Oct 7th, 2010.
48. Omry Morag, Gili Abramov, A. Goldbourt, "Similarities and differences within members of the Ff family of filamentous bacteriophage viruses", 52nd Experimental NMR conference (ENC), Asilomar conference grounds, Pacific grove, CA. Apr 10th-15th, 2011.
49. A. Goldbourt, Uzi Eliav, Anat Haimovich, "Determination of the Lithium Binding Site in Inositol Monophosphatase, the Putative Target of Lithium therapy, by Magic Angle Spinning Solid State NMR", International conference on magnetic resonance in biological systems (ICMRBS), Lyon, France, Aug 19-24, 2012.

50. O. Morag, N. Sgourakis, D. Baker, G. Abramov, A. Goldbourn, "The structure of an intact bacteriophage virus capsid from magic-angle spinning solid-state NMR and Rosetta modeling", EUROMAR 2015 Congress, Jul 5-10, 2015.
51. A. Goldbourn, "A single mutation in a filamentous virus affects its atomic-scale structure, its macro-scale behavior, but not interactions on the nano-scale", 57th Experimental Nuclear Magnetic Resonance Conference (ENC), Apr 10-15, 2016. Pittsburgh, PA, USA.
52. A. Goldbourn, T. Aharoni "dynamics and rigidity in a filamentous bacteriophage virus revealed by magic-angle spinning NMR", 59th Experimental Nuclear Magnetic Resonance Conference (ENC), Apr 28-May 4, 2018. Orlando, FL, USA.

Additional activities

1. Co-Chair (with Dr. Uri Nevo) of the *Israel Magnetic resonance society meeting*, Tel Aviv University, 2011.
2. Chair (with Dr. Micha Fridman) of the *Israel chemical society meeting*, Tel Aviv, Feb 9-10, 2016.
3. Member of the Scientific Committee of the *10th Alpine Conference on Solid-State NMR*, Chamonix, France, Sep 10-14, 2017.
4. Landau Prize committee member, biochemistry, 2017.
5. Member of the Organizing Committee of the *Rocky Mountain Conference on Magnetic Resonance*, 2018-2026.
6. Guest Editor, Journal of Structural biology, Special issue on solid-state NMR, 2018.

INVITED TALKS

1. A. Goldbourn and S. Vega "Multiple quantum magic-angle-spinning: High resolution NMR of quadrupolar nuclei", Physical Chemistry seminars, Ben-Gurion university of the Negev, Mar 15, 2002.
2. A. Goldbourn and S. Vega "Applying high-resolution solid state NMR to the study of inorganic materials", Magnetic resonance seminar series, Weizmann Institute of Science, Rehovot, Israel, 2003.
3. A. Goldbourn, B.J. Gross, L.A. Day and A.E. McDermott, "SSNMR Studies of Intact Virus: Assignment of the coat protein of the 36MD Pfl filamentous phage", New York Structural Biology center Meta group meeting, New York, NY, USA, Mar 29, 2006.
4. A. Goldbourn, "Studies of an Intact Virus by Magic-angle Spinning NMR", Physical and Analytical Chemistry Seminar, Technion Institute of Technology, Haifa, Israel, Jan 9, 2007.
5. A. Goldbourn, "Studies of an Intact Virus by Magic-angle Spinning NMR", Organics/Biophysics chemistry seminar, Ben Gurion University of the Negev, Beer Sheva, Israel, Jan 10, 2007.
6. A. Goldbourn, "Studies of an Intact Virus by Magic-angle Spinning NMR", joint seminar, Department of Chemical physics and Department of Structural biology, Weizmann Institute of Sciences, Rehovot, Israel, Jan 14, 2007.
7. A. Goldbourn, "Studies of an Intact Virus by Magic-angle Spinning NMR", Department of Chemistry, Hebrew University, Jerusalem, Israel, Jan 22, 2007.
8. A. Goldbourn, "An Intact Virus Studied by Magic-Angle spinning NMR", Physical chemistry student and post-doc seminar, Columbia University, Feb 21, 2007.
9. A. Goldbourn, B.J. Gross, L.A. Day and A.E. McDermott, "The conformation, oligomeric state and phase transition in intact Pfl filamentous phage as viewed by MAS SSNMR", New York Structural Biology center Meta group meeting, New York, NY, USA, Jul 11, 2007.

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10. A. Goldbourn, Pfl filamentous bacteriophage virus studied by magic-angle spinning Solid State NMR, Wolfson-Nussinov bioinformatics seminar, School of computer sciences, Tel Aviv University, Dec 10, 2007.
11. A. Goldbourn, L.A. Day and A.E. McDermott, "Solid state NMR studies of an intact virus: The Pfl filamentous bacteriophage" Magnetic resonance seminar series, Weizmann institute, March 7 2008.

12. A. Goldbourt, "Conformation, symmetry, and phase transition in the Pfl virus: A solid-state NMR approach", Chemical Physics Seminars, Tel Aviv University, Apr 3, 2008.
13. A. Goldbourt, "Magic-angle spinning NMR of intact filamentous viruses" Chemistry Colloquium, Bar Ilan University, March 18, 2009.
14. A. Goldbourt, "Structural characterization of large biological complexes by magic-angle spinning NMR :New insights into intact filamentous bacteriophage viruses", Department of Biochemistry and molecular biology seminar, faculty of Life sciences, Tel Aviv, Apr 7 2010.
15. A. Goldbourt, "Magic Angle spinning NMR studies of filamentous bacteriophage viruses", Chemistry Colloquium, Ben-Gurion University, May 3 2010.
16. A. Goldbourt, Omry Morag, Gili Abramov, "Similarities and differences within members of class-I filamentous bacteriophages as viewed by magic-angle spinning NMR", New York Structural Biology center Meta group meeting, New York, NY, USA, Aug 6, 2010.
17. A. Goldbourt, "Magic angle spinning NMR of viruses and enzymes", Department of Chemistry and Biochemistry, University of San Diego, CA, Apr 7th, 2011.
18. A. Goldbourt, "Probing structure (and dynamics) with magic-angle spinning NMR – from single bonds to intact viruses", Chemical Physics Symposium, May 15th, 2011.
19. A. Goldbourt, "Probing structure with magic-angle spinning NMR – from single bonds to intact viruses, Karlsruhe Institute of Technology, Jun 6th, 2011.
20. A. Goldbourt, "A magic-angle on biological systems - from enzymes to intact viruses", University of Konstanz, Jun 7th, 2011.
21. A. Goldbourt, "Application and development of magic-angle spinning solid-state NMR methods to study bio-macromolecules", Magnetic Resonance Seminars, Weizmann Institute of Science, Dec 1, 2011.
22. A. Goldbourt, "Development and application of magic-angle spinning NMR methods to study metalloproteins", TATA institute of fundamental research, Mumbai, India, Feb 10th, 2012.
23. A. Goldbourt, "Probing structure with solid-state NMR: From a single spin-pair to enzymes and intact viruses", Department of chemistry and biochemistry, University of Windsor, Windsor, ON Canada, Jul 23rd, 2012.
24. A. Goldbourt, " Probing structure with solid-state NMR: From a single spin-pair to enzymes and intact viruses", New York Structural Biology center Meta group meeting, New York, NY, USA, Jul 27, 2012.
25. A. Goldbourt, "High resolution structure and dynamics of intact filamentous viruses revealed by magic-angle spinning NMR", Institute of Chemistry, Hebrew university, Dec 26th, 2013.
26. A. Goldbourt, "Magic angle spinning NMR as a robust tool to study biomolecules: Elucidating the atomic resolution structure of the M13 bacteriophage virus", Department of structural biology, Weizmann Institute of Science, Rehovot, Israel, Mar 24th, 2015.
27. A. Goldbourt, "Structure and dynamics of intact viruses studied with magic-angle spinning NMR", Institut für Medizinische Physik und Biophysik, University of Leipzig, Leipzig, Germany, Jul 10th 2015.
28. A. Goldbourt, "Structural chemistry and biology from Magic-angle spinning NMR", Chemical Physics Symposium, School of Chemistry, Tel Aviv University, 17 Nov 2016.
29. A. Goldbourt, "Structural chemistry and biology from Magic-angle spinning NMR", Department of chemical engineering, Ben-Gurion University, Be'er Sheva, Israel, 3 Jan 2017.
30. A. Goldbourt, "probing large anisotropy spins with phase modulated pulses under magic-angle spinning NMR", Department of Chemistry, Bar-Ilan University, 24 Jan 2017.
31. A. Goldbourt, "Structural chemistry and biology from Magic-angle spinning NMR", CSIR-NIIST, Trivandrum, Kerala, 21 Feb 2017.
32. A. Goldbourt, "High-resolution structure and dynamics of filamentous viruses revealed by magic-angle spinning NMR", FMP colloquium, Forschungsinstitut für Molekulare Pharmakologie (FMP) berlin, Nov 16th 2017.
33. A. Goldbourt, "Structure and Dynamics of Bacteriophage Viruses Revealed by Magic-Angle Spinning NMR", University of Urbana Champaign, IL, Department of Chemistry seminar, Apr 26th, 2018.
34. A. Goldbourt, "Structure and Dynamics of Bacteriophage Viruses Revealed by Magic-Angle Spinning NMR", Washington University in St. Louis, MI, Department of Chemistry seminar, Apr 27th, 2018.

D. ACADEMIC AND PROFESSIONAL AWARDS

D.1. EXTERNAL GRANTS (as PI or co-PI)

1. 2008	Israel Science Foundation startup equipment grant # 1669/08. A laboratory for the research of structure and dynamics of proteins and complex biological systems by solid-state NMR	\$120000	PI
2. 2008-2012	Marie Curie action integration grant (EU 7th framework, FP7), IRG #224800. Structural characterization of filamentous bacteriophage viruses by magic-angle spinning solid-state NMR spectroscopy	€100,000	PI
3. 2008-2012	Israel Science Foundation startup grant # 241/08. Structural characterization of filamentous bacteriophage viruses by magic-angle spinning solid-state NMR	628000NIS	PI
4. 2010-2012	The National institute of Psychobiology (NIPI). A molecular view on the role of lithium in the treatment of bipolar disorder	\$50000	PI
5. 2012-2015	Binational Science Foundation #201177 (with T. Polenova from Univ. of Delaware, Ranked in top 5, supported by the Leona M. and Harry B. Helmsley Charitable Trust). Development and application of advanced methods to study the active sites of metalloproteins using magic-angle spinning solid-state NMR	\$230000	co-PI
6. 2012-2016	Israel Science Foundation grant #487/12. Structure, polymorphism and dynamics in macromolecular assemblies of the viral infection system - a magic-angle spinning solid-state NMR study	840000NIS	PI
7. 2016	Israel Science Foundation grant #2078/15, Institutional equipment grant (with Prof. Y. Cohen, Dr. Uri Nevo) A hybrid NMR/MRI system for MR microscopy and solid-state NMR	1,100,000NIS	co-PI
8. 2017-2021	Israel Science Foundation grant #847/17. Magic-angle spinning NMR toolbox to study dynamics and structure in bacteriophage viruses	1,240,000NIS	PI
9. 2017-2021	Binational Science Foundation #2016169 (with T. Polenova from Univ. of Delaware). New Quadrupolar NMR Techniques for Emerging NMR Technologies: Atomic-Resolution Characterization of Challenging Metal Sites in Bioinorganic and Catalyst Materials	\$230000	PI
10. 2018-2021	ISF-NSFC grant #2423/18 (with Prof. Ye Xiang, Tsinghua University). A synergetic approach to elucidate structure and dynamics of mature and premature filamentous bacterial viruses by combining Magic-angle spinning NMR and cryoEM	750,000 NIS	PI

D.2. PRIZES

1. Student travel award for the 2nd Alpine Conference on Solid-State NMR, Chamonix-Mont Blanc, France, Sep 9-13, 2001.
2. Member of the first Israeli student delegation to attend the 52nd Meeting of the Nobel Laureates in Lindau, Germany, July 1–5, 2002.
3. The Israeli parliament excellent student award, Jun 17, 2003.
4. The lady Anne Chain Memorial prize for Ph.D. from the Feinberg graduation school, Weizmann institute of science, 2003.
-----From Tel Aviv University-----
5. The Gitte Vold Memorial Prize Lecture, 7th Alpine conference on Solid-state NMR, Chamonix-Mont Blanc, France, Sep 11-15, 2011.

E. MEMBERSHIP IN PROFESSIONAL SOCIETIES

2008 - American Chemical Society
 2007 - Israel Chemical society

F.1 PH.D STUDENTS SUPERVISED

1. 2011-2015 Gili Abramov Currently postdoc at University of Toronto
Title: "Magic-angle spinning solid-state NMR study of bacteriophages".
2. 2010-2015 Evgeny Nimerovsky (direct) Currently Research associate at Urbana-Champaign
Title: "Development and improvement of magic angle spinning solid-state NMR techniques for distance measurements"
3. 2009-2015 Hadar Ivanir (direct program) Currently postdoc in Brandeis University
Title: "Magic-Angle Spinning Solid-State NMR Studies of Carbohydrate-Binding Module Proteins"
4. 2008-2015 Omry Morag (direct program) Currently manager of the students' physical chemistry laboratory at Tel Aviv University.
Title: "Structural studies of filamentous bacteriophages by magic-angle spinning solid-state NMR"
5. 2011-2017 Anat Haimovich Currently my lab assistant
Title: "NMR of enzymes associated with bipolar disorder"
6. 2014-2018 Tom Aharoni
Title: "Automation for data processing of biomolecular MAS NMR experiments"
7. 2015- Smadar Kedem
Title: "Structural characterization of the complex of gene-5 protein with DNA"
8. 2016- Maria Makrinich
Title: "Quadrupolar nuclei in MAS NMR"
9. 2017- Meital Bachar
Title: "Carbohydrate binding module proteins"
10. 2018- Gal Porat
Title: "Non-uniform sampling and ¹H-detection in biomolecular ssNMR"

F.2 MASTER STUDENTS SUPERVISED

1. 2008-2010 Anat Haimovich
Title: "Characterization of the Binding Site of Lithium in Inositol Monophosphatase, the Putative Target of Lithium Therapy: A ^7Li Magic-Angle Spinning Solid State NMR Study"
2. 2008-2010 Bosmat Refaeli
Title: "New Isotopic labeling methods using the Entner-Doudoroff (ED) pathway in E. coli for protein NMR research"
3. 2008-2010 Gili Abramov
Title: "A Filamentous Phage Studied by Magic-Angle Spinning Solid-State NMR: Sample Preparation & Characterization of the Coat Protein in fd Virus"
4. 2014-2016 Nir Dayan
Title: "Magic-angle spinning NMR atomic-resolution studies of Ike bacteriophage"
5. 2015-2017 Meital Bachar
Title: "Magic-angle spinning NMR of carbohydrate binding module proteins"

G. TEACHING

1. Fundamentals of Magnetic Resonance (since 2008)
2. General Chemistry 1 (2009-2017)
3. Chemical Physics Laboratory 2 (starting Oct 2017)
4. Chemical Physics Laboratory 1 (starting Mar 2018)

Group posters & presentations (From Tel Aviv University, P:Poster, L:Lecture):

1. (P) G. Abramov, A. Goldbourn, "Filamentous phage studied by magic-angle spinning solid-state NMR: sample preparation and characterization of the major coat protein in fd virus", 75th meeting of the Israel Chemical Society, Tel-Aviv, Israel, Jan 24-25, 2010 & IMRS (Israel magnetic resonance society) & EAST-NMR meeting, Bar Ilan University, Jun 8-9, 2010.
2. (P) O. Morag, A. Goldbourn, "Characterization of the m13 filamentous bacteriophage by means of magic-angle spinning solid-state NMR: preparation, purification and preliminary assignment of the intact bacteriophage", 75th meeting of the Israel Chemical Society, Tel-Aviv, Israel, Jan 24-25, 2010.
3. (P) E. Nimerovsky & A. Goldbourn, "Efficient rotational echo double resonance recoupling between a spin-1/2 and a quadrupolar spin at high spinning rates and weak irradiation fields", IMRS (Israel magnetic resonance society) & EAST-NMR meeting, Bar Ilan University, Jun 8-9, 2010.
4. (P) A. Haimovich, A. Goldbourn, "Overexpression, purification, characterization and ^7Li MAS solid state NMR spectroscopy of inositol monophosphatase, a putative target of lithium therapy", 75th meeting of the Israel Chemical Society, Tel-Aviv, Israel, Jan 24-25, 2010 & IMRS (Israel magnetic resonance society) & EAST-NMR meeting, Bar Ilan University, Jun 8-9, 2010.
5. (L) O. Morag, A. Goldbourn, "Characterization of the m13 filamentous bacteriophage by means of magic-angle spinning solid-state NMR: preparation, purification and preliminary assignment of the intact bacteriophage" IMRS (Israel magnetic resonance society) & EAST-NMR meeting, Bar Ilan University, Jun 8-9, 2010.
6. (L) G. Abramov, A. Goldbourn, "Magic-angle spinning NMR studies of the fd filamentous phage virus", 76th meeting of the Israel Chemical Society, Tel-Aviv, Israel, Feb 9-10, 2011.
7. (P) E. Nimerovsky & A. Goldbourn, "Distance measurements in solid-state NMR using weak irradiation fields and high spinning rates", 76th meeting of the Israel Chemical Society, Tel-Aviv, Israel, Feb 9-10, 2011.

8. (P) O. Morag, A. Goldbourt, "Similarities & Differences within Members of the Ff Family of Filamentous Bacteriophage Viruses: A MAS NMR Study", 76th meeting of the Israel Chemical Society, Tel-Aviv, Israel, Feb 9-10, 2011.
9. (P) E. Nimerovsky & A. Goldbourt "Efficient recoupling of the dipolar interaction between a spins-1/2 and a quadrupolar spin under non-adiabatic conditions", Israel Magnetic Resonance Society, Beit Hatfuzot, Tel Aviv University, Jun 1st, 2011.
7. (P) G. Abramov, O. Morag, A. Goldbourt, "Class-I filamentous bacteriophage virus studied by magic-angle spinning solid-state NMR, 7th alpine conference on Solid-state NMR, Chamonix-Mont Blanc, France, Sep 11-15, 2011.
10. (P) O. Morag, G. Abramov, A. Goldbourt, "Similarities & Differences within Members of the Ff Family of Filamentous phage, and structural constraints, revealed by magic-angle spinning NMR" 7th alpine conference on Solid-state NMR, Chamonix-Mont Blanc, France, Sep 11-15, 2011.
11. (P) U. Eliav, A. Goldbourt, "High rank tensors correlation spectroscopy between lithium and protons", 7th alpine conference on Solid-state NMR, Chamonix-Mont Blanc, France, Sep 11-15, 2011.
12. (P) **Best poster award:** A. Haimovich, A. Goldbourt, "Direct determination of the Lithium binding site in inositol monophosphatase, the putative target for Lithium therapy, by magic-angle spinning solid state NMR", Annual meeting of the Israel Biophysical society, Tel Aviv University, Tel Aviv, Oct 24, 2011.
13. (P) O. Morag, G. Abramov, A. Goldbourt, "Similarities & Differences within Members of the Ff Family of Filamentous phage, and structural constraints, revealed by magic-angle spinning NMR" Annual meeting of the Israel Biophysical society, Tel Aviv University, Tel Aviv, Oct 24, 2011.
14. (P) E. Nimerovsky, A. Goldbourt, "Efficient Recoupling of the Dipolar Interaction between Spin-1/2 and a Quadrupolar Spin in Magic Angle Spinning NMR under Non-Adiabatic Conditions", 77th meeting of the Israel Chemical Society, Kfar HaMaccabiah, Israel, Feb 7-8, 2012.
15. (P) A. Haimovich, A. Goldbourt, "Determination of the Lithium Binding Site in Inositol Monophosphatase, the Putative Target for Lithium Therapy, by Magic-Angle Spinning Solid State NMR", 77th meeting of the Israel Chemical Society, Kfar HaMaccabiah, Israel, Feb 7-8, 2012.
16. (P) O. Morag, A. Goldbourt, "Insight into DNA-Protein Interface in Filamentous Bacteriophage Using Solid-State MAS NMR", 78th meeting of the Israel Chemical Society, Tel-Aviv, Israel, February 12-13, 2013.
17. (P) H. Ivanir, A. Goldbourt, "Structural Studies of Cellulose Binding Module by Magic-Angle Spinning Solid State NMR", 78th meeting of the Israel Chemical Society, Tel-Aviv, Israel, February 12-13, 2013.
18. (P) Omry Morag, A. Goldbourt, "Structural studies of a filamentous bacteriophage by magic-angle spinning solid-state NMR", EUROMAR 2013, Hersonissos, Crete, Greece, Jun-30 – Jul-5, 2013.
19. (P) A. Haimovich, A. Goldbourt, "Determination of the lithium binding site in inositol monophosphatase, the putative target for lithium therapy, by magic-angle spinning solid state NMR ", EUROMAR 2013, Hersonissos, Crete, Greece, Jun-30 – Jul-5, 2013.
20. (P) G. Abramov, A. Goldbourt, "Crosslinking studied by mas solid-state NMR ", EUROMAR 2013, Hersonissos, Crete, Greece, Jun-30 – Jul-5, 2013.
21. (L) H. Ivanir, A. Goldbourt, "Structural studies of a cellulose-binding protein by Magic-angle spinning solid-state NMR", EUROCARB17 (17th European Carbohydrate Symposium), July 7-11, 2013.
22. (P) H. Ivanir, A. Goldbourt, "Structural studies of a cellulose-binding protein by Magic-angle spinning solid-state NMR", 8th alpine conference on Solid-state NMR, Chamonix-Mont Blanc, France, Sep 8-12, 2013.
23. (P) E. Niverovsky, A. Goldbourt, "TBA", 8th alpine conference on Solid-state NMR, Chamonix-Mont Blanc, France, Sep 8-12, 2013.
24. (P) U. Eliav, A. Goldbourt, "TBA", 8th alpine conference on Solid-state NMR, Chamonix-Mont Blanc, France, Sep 8-12, 2013.
25. (P) E. Niverovsky, A. Goldbourt, Israel Magnetic Resonance Meeting, Technion Jun 12th, 2014. "Phase-modulated LA-REDOR: A robust, accurate and efficient solid-state NMR technique for distance measurements between a spin-1/2 and a quadrupole spin"
26. (P) Hadar Ivanir, Amir Goldbourt, Israel Magnetic Resonance Meeting, Technion Jun 12th, 2014. "Structural studies of cellulose-binding protein by Magic-angle spinning solid state NMR"
27. (P) A. Haimovich, A. Goldbourt, Israel Magnetic Resonance Meeting, Technion Jun 12th, 2014. "Determination of the lithium binding site in inositol monophosphatase, the putative target for lithium therapy, by magic-angle spinning solid state NMR"
28. (P) Hadar Ivanir, "Chemical shift assignment, conformation and dynamics of a cellulose binding protein by magic-angle spinning solid-state NMR", EUROMAR 2014, 29/6-3/7.

29. (P) Evgeny Nimerovsky, "Phase-modulated LA-REDOR: A robust, accurate and efficient solid-state NMR technique for distance measurements between a spin-1/2 and a quadrupole spin", EUROMAR 2014, 29/6-3/7.
30. (P) Gili Abramov, "Nucleotide-Type Chemical Shift Assignment of the Encapsulated 40 kbp dsDNA in Intact Bacteriophage T7 by MAS Solid-State NMR.", Rocky Mountain Conference on Magnetic Resonance, Copper mountain, Colorado, USA, Jul 13-17, 2014.
31. (P) Omry Morag, "Rocky Mountain Conference on Magnetic Resonance, Copper Mountain, Colorado, USA, Jul 13-17, 2014." **Best poster award.**