

Ivan Aprahamian

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Current Position

2019–Present Professor of Chemistry, Department of Chemistry, Dartmouth College, Hanover NH

Education

2005 PhD in Organic Chemistry under the supervision of Professors Mordecai Rabinovitz and Tuvia Sheradsky, The Hebrew University of Jerusalem, Jerusalem, Israel. Title: *π -Conjugated Polycyclic Anions: Bowls, Baskets and Buckyballs*

2000 MSc in Organic Chemistry (within the direct PhD program), The Hebrew University of Jerusalem, Jerusalem, Israel

1998 BSc in Chemistry (*Magna Cum Laude*), The Hebrew University of Jerusalem, Jerusalem, Israel

Professional Experience

2014–2019 Associate Professor of Chemistry, Department of Chemistry, Dartmouth College, Hanover NH

2008–2014 Assistant Professor of Chemistry, Department of Chemistry, Dartmouth College, Hanover NH

2005–2008 Postdoctoral research in the laboratories of Sir Fraser Stoddart, Department of Chemistry and Biochemistry, UCLA

2006 Teaching fellow at the Department of Chemistry and Biochemistry, UCLA

2003 Visiting research assistant in the laboratories of Professor Martin Saunders, Department of Chemistry, Yale University, New Haven CT

2002 Minerva school for “Computational Quantum Chemistry”, Schloß Blankensee, Germany

1999–2005 Teaching assistant at The Hebrew University of Jerusalem, Jerusalem, Israel

1996–1998 Undergraduate research in the laboratories of Professor Itamar Willner, The Hebrew University of Jerusalem, Jerusalem, Israel

Awards and Honors

2019 Susan and Gib Myers 1964 Faculty Fellowship

2018 Fellow of the Royal Society of Chemistry

2017 Humboldt Research Fellowship

2016 Liebig-College Visiting Research Professor (Germany)

2016 Cram Lehn Pedersen Prize in Supramolecular Chemistry

2014	Linda B. and Kendrick R. Wilson III 1969 Fellowship
2014	Visiting Professor at Aoyama Gakuin University (Japan)
2013	ACS Young Academic Investigators Award Symposium
2013	Journal of Physical Organic Chemistry Early Excellence Profilee
2013	NSF CAREER Award
2013	Dartmouth Junior Faculty Fellowship
2008	Burke Research Initiation Award
2003	Horowitz Scholarship for Outstanding PhD Students
2003	Danny and Clara Klein Scholarship for PhD Students in Chemistry

Courses Taught

Dartmouth College

- Chem 57
Undergraduate: Honors Organic Chemistry (1st term of a 2-term sequence)
- Chem 151/93
Graduate/Undergraduate: Physical Organic Chemistry
- Chem 51
Undergraduate: Organic Chemistry (1st term of a 2-term sequence)
- Chem 58
Undergraduate: Honors Organic Chemistry (2nd term of a 2-term sequence)
- Chem 157
Undergraduate and Graduate: Topics in Advanced Organic Chemistry -
Introduction to Supramolecular Chemistry
- Chem 262
Graduate: Research Colloquium in Chemistry/Synthetic Organic Chemistry
- Chem 261
Graduate: Research Colloquium in Materials Chemistry

UCLA

- Chemistry 143B/243B (Spring 2006)
Graduate: Modern Physical Organic Chemistry

List of Publications

Independent Research

- [71] S. Yang, D. Larsen, M. Pellegrini, S. Meier, D. F. Mierke,* S. R. Beeren,* I. **Aprahamian***, [Dynamic enzymatic synthesis of \$\gamma\$ -cyclodextrin using a photoremovable hydrazone template](#), *Chem* **2021**, 7.10.1016/j.chempr.2021.05.013

Highlighted in [C&EN](#), [COSMOS](#), [Dartmouth News](#), [NRC](#) and [ChemistryWorld](#)

- [70] A. N. Bismillah, I. **Aprahamian***, [Fundamental studies to emerging applications of pyrrole-BF₂ \(BOPHY\) fluorophores](#), *Chem. Soc. Rev.* **2021**, 50, 5631–5649

- [69] B. Shao, **I. Aprahamian***, [Hydrazones as New Molecular Tools](#), *Chem* **2020**, *6*, 2162–2173
- [68] **I. Aprahamian***, [The Future of Molecular Machines](#), *ACS Cent. Sci.* **2020**, *6*, 347–358
- [67] X. Guo, B. Shao, S. Zhou*, **I. Aprahamian***, Z. Chen*, [Visualizing intracellular particles and precise control of drug release using an emissive hydrazone photochrome](#) *Chem. Sci.* **2020**, *11*, 3016–3021
- [66] B. Shao, **I. Aprahamian***, [Planarization-induced activation wavelength red-shift and thermal half-life acceleration in hydrazone photoswitches](#) *ChemistryOpen* **2020**, *9*, 191–194

Invited contribution to a special issue dedicated to the Prof Jean-Marie Lehn's 80th birthday

- [65] L.-Q. Zheng, S. Yang, J. Lan, L. Gyr, G. Goubert, H. Qian, **I. Aprahamian***, R. Zenobi*, [Solution phase and surface photoisomerization of a hydrazone switch with long thermal half-life](#) *J. Am. Chem. Soc.* **2019**, *141*, 17637–17645
- [64] A. Iagatti, B. Shao,; A. Credi, B. Ventura,* **I. Aprahamian***, M. Di Donato*, [Ultrafast processes triggered by one- and two-photon excitation of a photochromic and luminescent hydrazone](#), *Beilstein J. Org. Chem.* **2019**, *15*, 2438–2446

Invited contribution to a special issue on Molecular Switches

- [63] B. Shao, N. Stankewitz, J. A. Morris, M. D. Liptak, **I. Aprahamian***, [White-light emission from a structurally simple hydrazone](#) *ChemCommun* **2019**, *55*, 9551-9554
- [62] B. Shao, **I. Aprahamian***, [pH-Induced Fluorescence and Thermal Relaxation Rate Modulation in a Hydrazone Photoswitch](#) *ChemPhotoChem* **2019**, *3*, 361–364
- [61] B. Shao, H. Qian, Q. Li, **I. Aprahamian***, [Structure Property Analysis of the Solution and Solid-State Properties of Bistable Photochromic Hydrazones](#) *J. Am. Chem. Soc.* **2019**, *141*, 8364–8371
- [60] A. Ryabchun, Q. Li, F. Lancia, **I. Aprahamian***, N. Katsonis*, [Shape-Persistent Actuators from Hydrazone Photoswitches](#) *J. Am. Chem. Soc.* **2019**, *141*, 1196–1200
- [59] M. J. Moran, M. Magrini, D. Walba, **I. Aprahamian***, [Driving a Liquid Crystal Phase Transition using a Photochromic Hydrazone](#) *J. Am. Chem. Soc.* **2018**, *140*, 13623–13627
- [58] B. Shao, M. Baroncini, H. Qian, L. Bussotti, M. Di Donato, A. Credi*, **I. Aprahamian***, [Solution and Solid-State Emission Toggling of a Photochromic Hydrazone](#) *J. Am. Chem. Soc.* **2018**, *140*, 12323–12327

Highlighted in [ScienceDaily](#), [PhysOrg](#), and other news outlets

- [57] Q. Li, H. Qian, B. Shao, R. P. Hughes, **I. Aprahamian***, [Building Strain with Large Macrocycles and using it to Tune the Thermal Half-Lives of Hydrazone Photochromes](#), *J. Am. Chem. Soc.* **2018**, *140*, 11829–11835

Featured in [JACS Spotlights](#)

- [56] J. D. Harris, M. J. Moran, **I. Aprahamian***, [New Molecular Switch Architectures](#), *PNAS* **2018**, *115*, 9414–9422
- [55] H. Qian, S. Pramanic **I. Aprahamian**, [Photochromic Hydrazone Switches with Extremely Long Thermal Half-Lives](#), *J. Am. Chem. Soc.* **2017**, *139*, 9140-9143
- [54] **I. Aprahamian**, [Hydrazone Switches and Things in Between](#), *ChemCommun* **2017**, *53*, 6674–6684

Highlighted as front cover

- [53] H. Qian, Shao, B., **I. Aprahamian**, [Visible-Light Fluorescence Photomodulation in Azo-BF₂ Switches](#), *Tetrahedron* **2017**, *73*, 4901–4904

Invited contribution to the Tetrahedron Symposium-in-Print dedicated to Ben Feringa

- [52] V. Carboni, X. Su, H. Qian, **I. Aprahamian**, A. Credi, [Blue-Light-Emitting Triazolopyridinium and Triazoloquinolinium Salts](#), *ChemPhotoChem* **2017**, *1*, 222–229
- [51] H. Qian, Y.-Y. Wang, D.-S. Guo, **I. Aprahamian**, [Controlling the Isomerization Rate of an Azo-BF₂ Switch Using Aggregation](#), *J. Am. Chem. Soc.* **2017**, *139*, 1037–1040
- [50] H. Qian, M. E. Cousins, E. H. Horak, A. Wakefield, M. D. Liptak, **I. Aprahamian**, [Suppression of Kasha's Rule as a Mechanism for Fluorescent Molecular Rotors and Aggregation Induced Emission](#), *Nature Chem.* **2017**, *9*, 83–87.

Highlighted in [ScienceDaily](#) and [PhysOrg](#) and other news outlets.

- [49] S. Pramanik, **I. Aprahamian**, [Hydrazone Switch-Based Negative Feedback Loop](#), *J. Am. Chem. Soc.* **2016**, *138*, 15142–15145.
- [48] **I. Aprahamian**, [Molecules Bearing Robotic Arms](#), *Nature Chem.* **2016**, *8*, 97–99 (News and Views).
- [47] H. Qian, **I. Aprahamian**, [An Emissive and pH Switchable Hydrazone-Based Hydrogel](#), *Chem. Commun.* **2015**, *51*, 11158–11161

Highlighted as a [front cover](#)

[46] J. T. Foy, D. Ray, **I. Aprahamian**, [Regulating Signal Enhancement with Coordination-Coupled Deprotonation of a Hydrazone Switch](#), *Chem. Sci.* **2015**, *6*, 209–213 (Open Access)

[45] L. Tatum, J. T. Foy, **I. Aprahamian**, [Waste Management of Chemically Activated Switches: Using a Photoacid to Eliminate Accumulation of Side Products](#), *J. Am. Chem. Soc.* **2014**, *136*, 17438–17441 (Open Access)

Featured in [JACS Spotlights](#) and highlighted in [LaserFocusWorld](#), [ScienceDaily](#) and [PhysOrg](#). Also highlighted as front cover of [LaserFocusWorld](#)

[44] Y. Yang, R. P. Hughes, **I. Aprahamian**, [Near-Infrared Light Activated Azo-BF₂ Switches](#), *J. Am. Chem. Soc.* **2014**, *136*, 13190–13193 (Open Access)

[43] M. L. Croteau, X. Su, D. E. Wilcox, **I. Aprahamian**, [Metal Coordination and Isomerization of a Hydrazone Switch](#), *ChemPlusChem* **2014**, *79*, 1214–1224

Invited contribution to the [Early Career Series](#).

[42] L. Tatum, X. Su, **I. Aprahamian**, [Simple Hydrazone Building Blocks for Complicated Functional Materials](#), *Acc. Chem. Res.* **2014**, *47*, 2141–2149 (Open Access)

Invited contribution to the special issue on [Responsive Host Guest Systems](#).

[41] X. Su, **I. Aprahamian**, [Hydrazone-Based Switches, Metallo-Assemblies and Sensors](#), *Chem. Soc. Rev.* **2014**, *43*, 1963–1981 (Open Access)

Invited contribution to the special issue on [Supramolecular and Dynamic Covalent Reactivity](#). Highlighted as an [inside front cover](#).

[40] X. Su, **I. Aprahamian**, [Zinc\(II\)-Regulation of Hydrazone Switch Isomerization Kinetics](#), *Org. Lett.* **2013**, *15*, 5952–5955.

[39] X. Su, S. Voskian, R. P. Hughes, **I. Aprahamian**, [Manipulating Liquid Crystal Properties Using a pH Activated Hydrazone Switch](#), *Angew. Chem. Int. Ed.* **2013**, *52*, 10734–10739.

Highlighted in [Chemistry & Engineering News](#) (**2013**, *91* (35), 43), [Medical News Today](#), [Wiley-VCH Hot Topics](#), [Chemistry Views](#), [Liquid Crystals Today](#), [ScienceDaily](#) and as a frontispiece.

[38] T. F. Robbins, H. Qian, X. Su, R. P. Hughes, **I. Aprahamian**, [Cyanide Detection Using a Triazolopyridinium Salt](#), *Org. Lett.* **2013**, *15*, 2386–2389.

[37] X. Su, M. Liptak, **I. Aprahamian**, [Water Soluble Triazolopyridinium Salts as Tunable Blue Light Emitters](#), *Chem. Commun.* **2013**, *49*, 4160–4162.

Invited contribution to the [2013 ChemComm Emerging Investigator](#) Issue.

- [36] Y. Yang, R. P. Hughes, **I. Aprahamian**, [Visible Light Switching of a BF₂-Coordinated Azo Compound](#), *J. Am. Chem. Soc.* **2012**, *134*, 15221–15224.

Highlighted in [Chemistry & Engineering News](#) (**2012**, *90* (38), 26).

- [35] X. Su, M. Lõkov, A. Kütt, I. Leito, **I. Aprahamian**, [Unusual *para*-Substituent Effects on the Intramolecular Hydrogen-Bond in Hydrazone-Based Switches](#), *Chem. Commun.* **2012**, *48*, 10490-10492.

Invited contribution to the special issue on [Aromaticity](#).

- [34] D. Ray, J. T. Foy, R. P. Hughes, **I. Aprahamian**, [A Switching Cascade of Hydrazone-Based Rotary Switches through Coordination-Coupled Proton Relays](#), *Nature Chem.* **2012**, *4*, 757-762.

Highlighted in the [News and Views](#) section of *Nature Chemistry* (**2012**, *4*, 695-696).

- [33] X. Su, T. Lessing, **I. Aprahamian**, [The Importance of the Rotor in Hydrazone-Based Molecular Switches](#), *Beilstein J. Org. Chem.* **2012**, *8*, 872–876.

Invited contribution to the [Molecular Switches and Cages](#) thematic series.

- [32] J. T. Foy, E. B. Wilkes, **I. Aprahamian**, [Self-Assembly of Benzyl Cyclopentadienyl Lithium](#), *CrystEngComm* **2012**, *14*, 6126–6128.

Invited contribution to the [New Talent: Americas](#) special issue

- [31] Y. Yang, X. Su, C. Carroll, **I. Aprahamian**, [Aggregation Induced Emission in BF₂-Hydrazone \(BODIHY\) Complexes](#), *Chem. Sci.* **2012**, *3*, 610–613.

One of the [top 10 most accessed papers](#) in November 2011

Highlighted by [ACS Noteworthy Chemistry](#) (January 23, 2012)

- [30] S. M. Landge, K. Tkatchouk, D. Benitez, D. A. Lanfranchi, M. Elhabiri, W. A. Goddard III, **I. Aprahamian**, [Isomerization Mechanism in Hydrazone-Based Rotary Switches: Lateral Shift, Rotation, or Tautomerization?](#), *J. Am. Chem. Soc.* **2011**, *133*, 9812–9823.

- [29] X. Su, T. F. Robbins, **I. Aprahamian**, [Switching through Coordination-Coupled Proton Transfer](#), *Angew. Chem. Int. Ed.* **2011**, *50*, 1841–1844.

- [28] X. Su, **I. Aprahamian**, [Switching Around Two Axles: Controlling the Configuration and Conformation of a Hydrazone-Based Switch](#), *Org. Lett.* **2011**, *13*, 30–33.

- [27] S. M. Landge, **I. Aprahamian**, [pH Activated Configurational Rotary Switch: Controlling the *E/Z* Isomerization in Hydrazones](#), *J. Am. Chem. Soc.* **2009**, *131*, 18269–18271.

Post-doctoral Research

- [26] T. Yasuda, K. Tanabe, K. K. Coti, **I. Aprahamian**, J. F. Stoddart, T. Kato, [A Redox-Switchable \[2\]Rotaxane in a Liquid-Crystalline State](#), *Chem. Commun.* **2010**, 1224–1226.
Selected as a [Hot Article](#)
Highlighted in [NPG Asia Materials](#)
- [25] A. Trabolsi, A. C. Fahrenbach, S. K. Dey, A. I. Share, D. C. Friedman, S. Basu, T. B. Gasa, N. M. Khashab, S. Saha, **I. Aprahamian**, H. A. Khatib, A. H. Flood, J. F. Stoddart, [A Tristable \[2\]Pseudo\[2\]Rotaxane](#), *Chem. Commun.* **2010**, 871–873.
- [24] Y.-L. Zhao, W. R. Dichtel, A. H. Trabolsi, S. Saha, **I. Aprahamian**, J. F. Stoddart, [A Redox-Switchable \$\alpha\$ -Cyclodextrin-Based \[2\]Rotaxane](#), *J. Am. Chem. Soc.* **2008**, *130*, 11294–11296.
- [23] W. R. Dichtel, O. Š. Miljanić, W. Zhang, J. M. Spruell, K. Patel, **I. Aprahamian**, J. R. Heath, J. F. Stoddart, [Kinetic and Thermodynamic Approaches for the Efficient Formation of Mechanical Bonds](#), *Acc. Chem. Res.* **2008**, *41*, 1750–1761.
- [22] Y.-L. Zhao, **I. Aprahamian**, A. H. Trabolsi, N. Erina, J. F. Stoddart, [Organogel Formation by a Cholesterol-Stoppered Bistable \[2\]Rotaxane and Its Dumbbell Precursor](#), *J. Am. Chem. Soc.* **2008**, *130*, 6348–6350.
- [21] **I. Aprahamian**, J.-C. Olsen, A. H. Trabolsi, J. F. Stoddart, [Tetrathiafulvalene Radical Cation Dimerization in a Bistable Tripodal \[4\]Rotaxane](#), *Chemistry – A European Journal* **2008**, *14*, 3889–3895.
- [20] A. Coskun, S. Saha, **I. Aprahamian**, J. F. Stoddart, [A Reverse Donor-Acceptor Bistable \[2\]Catenane](#), *Org. Lett.* **2008**, *10*, 3187–3190.
- [19] O. Š. Miljanić, W. R. Dichtel, **I. Aprahamian**, R. D. Rohde, H. D. Agnew, J. R. Heath, J. F. Stoddart, [Rotaxanes and Catenanes by Click Chemistry](#), *QSAR Comb. Sci.* **2007**, *27*, 1165–1174. (Invited Review)
- [18] **I. Aprahamian**, O. Š. Miljanić, W. R. Dichtel, K. Isoda, T. Yasuda, T. Kato, J. F. Stoddart, [Clicked Interlocked Molecules](#), *Bull. Chem. Soc. Jpn.* **2007**, *80*, 1856–1869. (Invited Review – Back Cover)
- [17] S. Kang, **I. Aprahamian**, J. F. Stoddart, [Pirouetting in Chiral \[2\]Catenanes](#), *Israel J. Chem.* **2007**, *47*, 253–262.
- [16] **I. Aprahamian**, T. Yasuda, T. Ikeda, S. Saha, W. R. Dichtel, K. Isoda, T. Kato, J. F. Stoddart, [A Liquid Crystalline Bistable \[2\]Rotaxane](#), *Angew. Chem. Int. Ed.* **2007**, *46*, 4675–4679.
- [15] T. Ikeda, **I. Aprahamian**, J. F. Stoddart, [The Blue-Colored Donor-Acceptor \[2\]Rotaxane](#), *Org. Lett.* **2007**, *9*, 1481–1484.
- [14] **I. Aprahamian**, W. R. Dichtel, T. Ikeda, J. R. Heath, J. F. Stoddart, [A Clicked Bistable \[2\]Rotaxane](#), *Org. Lett.* **2007**, *9*, 1287–1290.
- [13] T. Ikeda, S. Saha, **I. Aprahamian**, K. C.-F. Leung, A. Williams, W.-Q. Deng, A. H. Flood, W. A. Goddard III, J. F. Stoddart, [Toward Electrochemically-Controllable Tristable Three-Station \[2\]Catenanes](#), *Chem. Asian J.* **2007**, *2*, 76–93.
- [12] S. Nygaard, K. C.-F. Leung, **I. Aprahamian**, T. Ikeda, S. Saha, B. W. Laursen, S.-Y. Kim, S. W. Hansen, P. C. Stein, A. H. Flood, J. F. Stoddart, J. O. Jeppesen, [Functionally Rigid Bistable \[2\]Rotaxanes](#), *J. Am. Chem. Soc.* **2007**, *129*, 960–970.

Graduate Research

- [11] R. J. Vermeil, D. O. Miller, L. N. Dawe, **I. Aprahamian**, T. Sheradsky, M. Rabinovitz, G. J. Bodwell, [Mixed \[2.2\]Cyclophanes of Pyrene and Benzene](#), *Aust. J. Chem.* **2010**, 63, 1703–1716.
- [10] **I. Aprahamian**, H. A. Wegner, T. Sternfeld, K. Rauch, A. de Meijere, T. Sheradsky, L. T. Scott, M. Rabinovitz, [Anions and Polyanions of Oligoindenopyrenes: Modes of Electron Delocalization and Dimerization](#), *Chem. Asian J.* **2006**, 1, 678–685.
- [9] A. de Meijere, B. Stulgies, K. Albrecht, K. Rauch, H. A. Wegner, H. Hopf, L. T. Scott, L. Eshdat, **I. Aprahamian**, M. Rabinovitz, ["New Interesting Molecular Topologies by Way of Modern Cross-Coupling Reactions"](#), *Pure Appl. Chem.* **2006**, 78, 813–830.
- [8] **I. Aprahamian**, D. V. Preda, M. Bancu, A. P. Belanger, T. Sheradsky, L. T. Scott, M. Rabinovitz, [Reduction of Bowl-Shaped Hydrocarbons: Dianions and Tetraanions of Annelated Corannulenes](#), *J. Org. Chem.* **2006**, 71, 290–298.
- [7] **I. Aprahamian**, D. Eisenberg, R. E. Hoffman, T. Sternfeld, Y. Matsuo, E. A. Jackson, E. Nakamura, L. T. Scott, T. Sheradsky, M. Rabinovitz, [Ball-and-Socket Stacking of Supercharged Geodesic Polyarenes: Bonding by Interstitial Lithium Ions](#), *J. Am. Chem. Soc.* **2005**, 127, 9581–9587.
- [6] **I. Aprahamian**, G. J. Bodwell, J. J. Fleming, G. P. Manning, M. R. Mannion, B. L. Merner, T. Sheradsky, R. J. Vermeij, M. Rabinovitz, [Reduction of Strained Polycycles: How Much Strain Can a Pyrene Anion Take?](#), *J. Am. Chem. Soc.* **2004**, 126, 6765–6775.
- [5] N. Treitel, R. Shenhar, **I. Aprahamian**, T. Sheradsky, M. Rabinovitz, [Calculations of PAH anions: When Are Diffuse Functions Necessary?](#) *Phys. Chem. Chem. Phys.* **2004**, 6, 1113–1121.
- [4] **I. Aprahamian**, G. J. Bodwell, J. J. Fleming, G. P. Manning, M. R. Mannion, T. Sheradsky, R. J. Vermeij, M. Rabinovitz, [Reductive Dimerization of Tethered Pyrenes: Implications For the Reduction of Polycyclic Aromatic Hydrocarbons](#), *Angew. Chem. Int. Ed.* **2003**, 42, 2547–2550.

This paper was designated a "VIP".

- [3] **I. Aprahamian**, G. J. Bodwell, J. J. Fleming, G. P. Manning, M. R. Mannion, T. Sheradsky, R. J. Vermeij, M. Rabinovitz, ["The Great Escape" from Antiaromaticity: Reduction of Strained Pyrenes](#)", *J. Am. Chem. Soc.* **2003**, 125, 1720–1721.

Selected as an [Editors' Choice](#) by *Science*. See *Science*, **2003**, 299, 979–981.

- [2] **I. Aprahamian**, R. E. Hoffman, T. Sheradsky, D. V. Preda, M. Bancu, L. T. Scott, M. Rabinovitz, [A Four-Step Alternating Reductive Dimerization/Bond-Cleavage of Indenocorannulene](#), *Angew. Chem. Int. Ed.* **2002**, 41, 1712–1715.
- [1] T. Sternfeld, R. E. Hoffman, **I. Aprahamian**, M. Rabinovitz, [Fullerene Anions: Unusual Charge Distribution in C₇₀⁶⁻](#), *Angew. Chem. Int. Ed.* **2001**, 40, 455–457.

Book Chapter(s):

- [1] **I. Aprahamian**, M. Rabinovitz, "Polycyclic and Fullerene Lithium Carbanions" In [The Chemistry of Organolithium Compounds \(Vol II\)](#); Z. Rappoport, I. Marek, Eds; John Wiley & Sons Ltd.; Chichester (UK), **2006**, 477–524.

Patents (Independent Research)

- [1] X. Su, **I. Aprahamian**, [Triazolium and Tetrazolium Derivatives as Organic Light Emitters](#)
- [2] Y. Yang, R. P. Hughes, **I. Aprahamian**, [Molecular Switches Based on *cis/trans* Isomerization of BF₂-Cordinated Azo Compounds](#)
- [3] H. Qian, S. Pramanik, **I. Aprahamian**, [Photochromic Hydrazone Switches](#).
- [4] S., Yang, J. Harris, L. Jeliakov, **I. Aprahamian** [T_G Manipulation via Z/E Hydrazone Photoswitching](#). Patent Application Number 17/017,222
- [5] S., Yang, D. Larsen, S. R. Beeren, **I. Aprahamian** Dynamic Templated Enzymatic Synthesis of a γ -Cyclodextrin Using a Photoremovable Hydrazone photoswitch. Provisional Application.

Invited Lectures

Independent Research

- [116] MRS, December 2, **2020**.
- [115] Department of Chemistry, KASUT, October 4, **2020**.
- [114] 2nd Frontiers in Photochemistry Conference, February 22, **2020**, Nassau, Bahamas
- [113] Molecular Rotors Workshop, IOCB Prague, November 22, **2019**, Prague, Czech Republic
- [112] Department of Chemistry, EPFL, October 31, **2019**, Lausanne, Switzerland
- [111] Department of Chemistry, University of Fribourg, October 30, **2019**, Fribourg, Switzerland
- [110] Department of Chemistry, University of Zurich, October 28, **2019**, Zurich, Switzerland
- [109] Department of Chemistry, University of Copenhagen, October 11, **2019**, Copenhagen, Denmark
- [108] 18th international Symposium on Novel Aromatic Compounds, July 24, **2019**, Sapporo, Japan
- [107] 14th International Symposium on Macrocyclic and Supramolecular Chemistry, June 3, **2019**, Lecce, Italy
- [106] DuPont, May 2, **2019**, Marlborough, MA
- [105] ACS Graduate Student Symposium on Artificial Molecular Machines, April 2, **2019**, Orlando, FL
- [104] Department of Chemistry, Chalmers University of Technology, February 20, **2019**, Gothenburg, Sweden
- [103] 10th Singapore International Chemistry Conference, December 17, **2018**, Singapore, Singapore
- [102] 6th Thailand International Nanotechnology Conference, December 13, **2018**, Bangkok, Thailand
- [101] Department of Chemistry, Humboldt University, November 21, **2018**, Berlin, Germany
- [100] Institute of Organic Chemistry, Polish Academy of Sciences, November 16, **2018**, Warsaw, Poland

- [99] Department of Chemistry, University of Munich, November 9, **2018**, Munich, Germany
- [98] Department of Chemistry, University of Würzburg, November 8, **2018**, Würzburg, Germany
- [97] Department of Chemistry, University of Heidelberg, November 7, **2018**, Heidelberg, Germany
- [96] Department of Chemistry, University of Ulm, November 6, **2018**, Ulm, Germany
- [95] Systems Chemistry Gordon Research Conference, July 29, **2018**, Newry, ME
- [94] Telluride Workshop on Molecular Rotors, Motors and Switches, June 26, **2018**, Telluride, CO
- [93] European Materials Research Society Meeting, June 20, **2018**, Strasbourg, France
- [92] Department of Chemistry, University of Belgrade, June 18, **2018**, Belgrade, Serbia
- [91] 101st Canadian Chemistry Conference, May 28, 2018, Edmonton, Canada
- [90] Department of Chemistry, Bard College, March 12, **2018**, Annandale-On-Hudson, NY
- [89] Department of Chemistry, University of Windsor, Sep 29, **2017**, Windsor, Canada
- [88] ChinaNano Conference, August 30, **2017**, Beijing, China
- [87] Photochemistry Gordon Research Conference, Bates College, July 24, **2017**, Lewiston, ME
- [86] Post-ISMSC Symposium, University of Southampton, July 7, **2017**, Southampton, UK
- [85] Golden Age for Chemistry Conference, University of Nottingham, June 25, **2017**, Nottingham, UK
- [84] Department of Chemistry, University of Kiel, May 26, **2017**, Kiel, Germany
- [83] Department of Chemistry, University of Twente, May 9, **2017**, Enschede, Netherlands
- [82] Department of Chemistry, University of Groningen, May 8, **2017**, Groningen, Netherlands
- [81] Institut de Science et d'Ingénierie Supramoléculaires (ISIS), April 27, **2017**, Strasbourg, France
- [80] Max Planck Institute for Polymer Research, April 26, **2017**, Mainz, Germany
- [79] Department of Chemistry, University of Bologna, February 28, **2017**, Bologna, Italy
- [78] ISOF, CNR, February 14, **2017**, Bologna, Italy
- [77] Department of Chemistry, Weizmann Institute, January 11, **2017**, Rehovot, Israel
- [76] Department of Chemistry, Hunter College, November 11, **2016**, New York, NY
- [75] SUNY ASRC, November 10, **2016**, New York, NY
- [74] 8th International Symposium on Photochromism (ISOP 2016), November 6, **2016**, Shanghai, China
- [73] National Centre for Nanoscience and Technology, Nov 2, **2016**, Beijing, China
- [72] Department of Chemistry, Tsinghua University, Nov 1, **2016**, Beijing, China
- [71] Department of Chemistry, Peking University, Oct 31, **2016**, Beijing, China
- [70] Department of Chemistry, Soochow University, Oct 28, **2016**, Suzhou, China
- [69] Department of Chemistry, UCSB, Oct 12, **2016**, Santa Barbara, CA
- [68] Institute of Chemistry, The Hebrew University of Jerusalem, Sep 6, **2016**, Jerusalem, Israel

- [67] Institute of Organic Chemistry, Justus-Liebig University Giessen, Aug 30, **2016**, Giessen, Germany
- [66] IBS Symposium on Supramolecular Chemistry, July 16, **2016**, Pohang, Korea
- [65] 11th International Symposium on Macrocyclic and Supramolecular Chemistry (ISMSC 2016), July 10, **2016**, Seoul, Korea
- [64] Department of Chemistry, Seoul National University, July 9, **2016**, Seoul, Korea
- [63] Department of Chemistry, Ewha Womens University, July 7, **2016**, Seoul, Korea
- [62] Department of Chemistry, Korea Advanced Institute of Science and Technology (KAIST), July 5, **2016**, Daejeon, Korea
- [61] Department of Chemistry, University of Miami, March 18, **2016**, Coral Gables, FL
- [60] Department of Chemistry, St Michael's College, Feb 5, **2016**, Burlington, VT
- [59] Department of Chemistry, Clarkson University, Sep 11, **2015**, Potsdam, NY
- [58] Artificial Molecular Switches and Motors Gordon Research Conference, June 6, **2015**, Stonehill College, Easton, MA
- [57] Department of Chemistry, UT Dallas, Feb 13, **2015**, Dallas, TX
- [56] Department of Chemistry, Bowling Green State University, Dec 3, **2014**, Bowling Green, OH
- [55] Department of Chemistry, University of New York, Abu Dhabi, Nov 5, **2014**, Abu Dhabi, UAE
- [54] Beilstein Symposium on Molecular Switches, September 24, **2014**, Yachthotel Chiemsee, Germany.
- [53] Department of Chemistry, University of Manchester, August 21, **2014**, Manchester, UK
- [52] Targeting and Triggering Basic Research Workshop and Review, August 19, **2014**, University of Cambridge, UK
- [51] Telluride Workshop on Molecular Rotors, Motors and Switches, June 29, **2014**, Telluride, CO
- [50] Department of Chemistry, University of Pittsburgh, March 22, **2014**, Pittsburgh, PA
- [49] Department of Chemistry and Biotechnology, The University of Tokyo, February 28, **2014**, Japan
- [48] Department of Chemistry, Keio University, February 26, **2014**, Japan
- [47] Department of Chemistry and Materials Science, Tokyo Institute of Technology, February 26, **2014**, Japan
- [46] International Symposium on Photochromism, Aoyama Gakuin University, February 24, **2014**, Japan
- [45] Department of Chemistry, Ben-Gurion University, October 1, **2013**, Ben-Gurion, Israel
- [44] Young Academic Investigators Award Symposium, 246th ACS National Meeting & Exposition, September 8, **2013**, Indianapolis, IN
- [43] Department of Chemistry, The Hong Kong Baptist University, August 7, **2013**, Hong Kong
- [42] Department of Chemistry, The Chinese University of Hong Kong, August 6, **2013**, Hong Kong
- [41] Department of Chemistry, National University of Singapore, June 26, **2013**, Singapore
- [40] Division of Chemistry and Biological Chemistry, Nanyang Technological University, July 24, **2013**, Singapore

- [39] Physical Organic Chemistry Gordon Research Conference, June 25, **2013**, Holderness, NH
- [38] Department of Chemistry, Northwestern University, May 23, **2013**, Evanston, IL
- [37] Department of Chemistry, Columbia University, May 9, **2013**, New York, NY
- [36] Department of Chemistry and Biochemistry, UCLA, April 25, **2013**, Los Angeles, CA
- [35] Department of Chemistry and Biochemistry, UCSD, April 22, **2013**, San Diego, CA
- [34] Department of Chemistry, University of Oregon, April 19, **2013**, Eugene, OR
- [33] Department of Chemistry, University of Washington, April 17, **2013**, Seattle, WA
- [32] Department of Chemistry, University of Reno, April 16, **2013**, Reno, NV
- [31] Department of Chemistry, University of Illinois at Urbana-Champaign, April 4, **2013**, Urbana, IL
- [30] Department of Chemistry, Ohio State University, April 2, **2013**, Columbus, OH.
- [29] Department of Chemistry, Wesleyan University, March 29, **2013**, Middletown, CT
- [28] Department of Chemistry, Texas A&M University, March 21, **2013**, College Station, TX
- [27] Department of Chemistry, Rice University, March 20, **2013**, Houston, TX
- [26] Department of Chemistry, University of Houston, March 19, **2013**, Houston, TX
- [25] Department of Chemistry and Biochemistry, University of Notre Dame, March 7, **2013**, Notre Dame, IN
- [24] Department of Chemistry, Indiana University, March 5, **2013**, Bloomington, IN
- [23] Department of Chemistry, Tulane University, February 25, **2013**, New Orleans, LA
- [22] Department of Chemistry and Biochemistry, University of Texas at Austin, February 22, **2013**, Austin, TX
- [21] Department of Chemistry, University of Maryland, February 7, **2013**, College Park, MD
- [20] Department of Chemistry, Johns Hopkins University, February 6, **2013**, Biltmore, MD
- [19] Department of Chemistry, Massachusetts Institute of Technology, January 29 **2013**, Boston, MA
- [18] Department of Chemistry, University of Kentucky, January 25 **2013**, Lexington, KY
- [17] Division of Materials Science and Engineering, Boston University, December 7 **2012**, Boston, MA
- [16] Department of Chemistry, UMass Amherst, November 15 **2012**, Amherst, MA
- [15] Department of Chemistry, Boston College, November 6 **2012**, Boston, MA
- [14] Department of Chemistry, University of Perugia, June 15 **2012**, Perugia, Italy
- [13] 4th International Conference on Smart Materials, Structures and Systems (CIMTEC 2012), June 14 **2012**, Montecatini Terme, Italy
- [12] Department of Chemistry, University of Bologna, June 12 **2012**, Bologna, Italy
- [11] Department of Chemistry, Northwestern University, May 26 **2012**, Evanston, IL (CCIS Memorial Weekend Symposium)
- [10] Department of Chemistry, University of Ohio, April 16 **2012**, Athens, OH
- [9] Department of Chemistry, Worcester Polytechnic Institute, April 4 29 **2012**, Worcester, MA

- [8] Department of Chemistry, University of Vermont, March 29 **2012**, Burlington, VT
- [7] Department of Chemistry, Brandeis University, March 12 **2012**, Waltham, MA
- [6] Department of Chemistry, University of New Hampshire, March 6 **2012**, Durham, NH
- [5] **Keynote Lecture**, Banff Symposium on Organic Chemistry, November 11 **2011**, Banff, Canada
- [4] Department of Chemistry, Nankai University, September 6 **2011**, Tianjin, China
- [3] Department of Chemistry, Florida State University, November 4 **2010**, Tallahassee, FL
- [2] Department of Chemistry, SUNY Geneseo, October 1 **2010**, Geneseo, NY
- [1] Department of Chemistry, Northwestern University, May 30 **2010**, Evanston, IL (CCIS Memorial Weekend Symposium)

Post-doctoral Research

- [4] Faculty of Chemistry, Weizmann Institute of Science, December 12 **2007**, Rehovot, Israel
- [3] Schulich Faculty of Chemistry, Technion – Israel Institute of Technology, December 10 **2007**, Haifa, Israel
- [2] School of Chemistry, Tel Aviv University, December 3 **2007**, Tel Aviv, Israel
- [1] Institute of Chemistry, The Hebrew University of Jerusalem, November 28 **2007**, Jerusalem, Israel

Graduate Research

- [1] Weizmann Institute of Science, May 17 **2005**, Rechovot, Israel

Contributed Lectures (16 in total; 11 as PI)

Independent Research

- [11] **I. Aprahamian**, Y. Yang, R. P. Hughes, Modulating BF₂-Coordinated Azo Compounds Using Visible Light, International Symposium on Photochromism 2013, September 23, **2013**, Berlin, Germany
- [10] **I. Aprahamian**, X. Su, S. Voskian, Translating the Molecular Motion of Hydrazone-Based Switches into Macroscopic Effects, 244th National American Chemical Society Meeting, September 9, **2013**, Indianapolis, IN
- [9] **I. Aprahamian**, F. T. Foy, D. Ray, Hydrazone-Based Switches for Proton Relay Cascades, 8th International Symposium on Macrocyclic and Supramolecular Chemistry, July 7, **2013**, Arlington, VA
- [8] **I. Aprahamian**, Y. Yang, Aggregation Induced Emission of BF₂-Hydrazone (BODIHY) Dyes, 244th National American Chemical Society Meeting, August 22, **2012**, Philadelphia, PA
- [7] **I. Aprahamian**, X. Su, T. F. Robbins, Triazolium-Based Light Emitters and Sensors, 244th National American Chemical Society Meeting, August 22, **2012**, Philadelphia, PA
- [6] **I. Aprahamian**, X. Su, S. M. Landge, Hydrazone-Based Rotary Switches, ISACS-6, September 4, **2011**, Beijing, China
- [5] **I. Aprahamian**, X. Su, S. M. Landge, Hydrazone-Based Rotary Switches, ISNA-14, July 25, **2011**, Eugene, OR

- [4] **I. Aprahamian**, X. Su, S. M. Landge, Hydrazone-Based Rotary Switches, Pacificchem 2010, December 15, **2010**, Honolulu, HI
- [3] **I. Aprahamian**, X. Su, Metal-induced switching of a hydrazone-based rotary switch, 240th National American Chemical Society Meeting, August 25, **2010**, Boston, MA
- [2] **I. Aprahamian**, S. M. Landge, X. Su, *E/Z* Isomerization in Hydrazone-Based Molecular Switches, 2010 Reaction Mechanisms Conference, June 25 **2010**, University of Massachusetts Amherst, MA (**selected out of 80 posters for a short talk**)
- [1] **I. Aprahamian**, pH Activated Configurational Rotary Switch: Controlling the *E/Z* Isomerization in Hydrazones, 239th National American Chemical Society Meeting, March 21 **2010**, San Francisco, CA

Post-doctoral Research

- [5] **I. Aprahamian**, J. C. Olsen, J. F. Stoddart, Molecular Carousel, 234th National American Chemical Society Meeting, August 19 **2007**, Boston, USA
- [4] **I. Aprahamian**, J. F. Stoddart, Exotic and Highly-Ordered Bistable [*n*]Rotaxanes, Department of Chemistry and Biotechnology, The University of Tokyo, July 30 **2007**, Tokyo, Japan
- [3] **I. Aprahamian**, T. Ikeda, W. R. Dichtel, J. F. Stoddart, Clicked Bistable [2]Rotaxanes, 233rd National American Chemical Society Meeting, March 29 **2007**, Chicago, USA
- [2] **I. Aprahamian**, T. Ikeda, S. Saha, W. R. Dichtel, J. F. Stoddart, Clicked Bistable [2]Rotaxanes, CNID – Centre for Nanoscience Innovation for Defence, December 12 **2006**, UCR Extension, Riverside, CA, USA
- [1] **I. Aprahamian**, K. C.-F. Leung, S. Nygaard, B. W. Laursen, T. Ikeda, S. Saha, P. C. Stein, J. O. Jeppesen, J. F. Stoddart, Rigid Two-Station [2]Rotaxanes, 232nd National American Chemical Society Meeting, September 10 **2006**, San Francisco, USA