

PERSONAL INFORMATION

Johannes P. M. Schelvis,
 Professor
 Montclair State University
 Department of Chemistry and Biochemistry
 1 Normal Avenue
 Montclair, NJ 07043

EDUCATION

B.S., Physics, 1985, Free University, Amsterdam, Netherlands
 Ph.D., Biophysics, 1995, University of Leiden, Leiden, Netherlands

PROFESSIONAL EXPERIENCE

Associate Chair	Montclair State University	September 2018 – present
Chair Department of Chemistry and Biochemistry	Montclair State University	September 2012 – June 2018
Professor	Montclair State University	September 2012 – present
Associate Professor	Montclair State University	September 2007 – August 2012
Assistant Professor	New York University	September 2000 – August 2007
Postdoctoral Researcher	Michigan State University	March 1995 - August 2000

HONORS AND AWARDS

- Montclair State University, College of Science and Mathematics, Faculty Research Award
- Institute Fellow, Margaret and Herman Sokol Institute for the Pharmaceutical Life Sciences at Montclair State University, September 2008 – August 2012
- Goddard Fellowship, New York University, 2004
- Whitehead Fellowship for Junior Faculty in Biomedical or Biological Sciences, New York University, 2003.

GRANTS AWARDED**COMPLETED**

- "Molecular Mechanisms of Photolyase and Cryptochrome" National Science Foundation, MCB-0920013, *August 2009 – July 2013*, \$419,453 t.c. (PI)
- "Binding of ICER to Its Own Promoter as a Mode of Cooperative Regulation" Margaret and Herman Sokol Institute for Pharmaceutical Life Sciences, *September 2008 – August 2012* (2nd-year no cost extension), \$100,000 (PI with Dr. Carlos Molina)
- "Light-Driven Damage and Repair of DNA", Faculty Scholarship Program, Montclair State University, *2008 – 2012*, 6 TCH (PI)
- CSAM Travel Award for Gordon Research Conference "Enzymes, Coenzymes, and Metabolic Pathways", Waterville Valley, NH, *July 18-23, 2010*, \$1,251.
- "Fingerprinting DNA Damage" Margaret and Herman Sokol Faculty/Student Research Grant Program, *July 2008 – June 2009*, \$2,000 (PI)
- CSAM Travel Award for 2nd Georgian Bay International Conference on Bioinorganic Chemistry, Parry Sound, Ontario, Canada, *May 26-29, 2009*, \$1,200.

- "Characterization of Tryptophan Radical and Flavin Excited State Intermediates in DNA Photolyase" National Science Foundation, MCB-0416511, *November 2004 – October 2008*, \$399,900 t.c. (PI)
- CSAM Travel Award for Gordon Research Conference "Enzymes, Coenzymes, and Metabolic Pathways", Biddeford, ME, *July 13 -18, 2008*, \$1,250.
- "Time-Resolved Resonance Raman Characterization of Tryptophan Radicals and Their Role in Electron Transfer in DNA Photolyase", American Chemical Society, Petroleum Research Fund, 42200-AC6, *February 2005 – August 2007*, \$80,000 t.c (PI)
- "Catalysis of isoniazid action by *M. tuberculosis* KatG", National Institutes of Health, NGA# 1 R01 AI60014-01A1, *January 2005 – December 2006*, \$55,278 t.c. (Sub-Contractor)

RESEARCH AFFILIATES AT MSU (2007 – present)

- Postdocs supervised: 1
- MS students supervised
Research: 6
Literature: 5
Independent Study: 7
- BS/BA undergraduate research supervised
Research: 30
Honor's Thesis: 1

RESEARCH AFFILIATES AT NYU (2000 – 2007)

- Postdocs supervised: 2
- Doctoral dissertations supervised: 2
- MS/MA students supervised: 4
- BS/BA undergraduate research supervised: 10
- BS Honor's Thesis supervised: 2

REFEREED PUBLISHED ARTICLES (undergraduate authors underlined, MSU bold)

41. **Y.M. Gindt**, G. Connolly, A.L. Vonder Haar, M. Kikhwa, and **J.P.M. Schelvis** "Investigation of the pH-Dependence of the Oxidation of FAD in VcCRY-1, a Member of the Cryptochrome-DASH Family", *Photochem. Photobiol. Sciences* 20, 831-841, **2021**.
40. **J.P.M. Schelvis** and **Y.M. Gindt** "A Review of Spectroscopic and Biophysical Chemical Studies of the Complex of CPD Photolyase and Cryptochrome DASH with Substrate DNA", *Photochem. Photobiol.* 93, 26-36, **2017**.
39. **J.P.M. Schelvis**, X. Zhu, and **Y.M. Gindt** "Enzyme-Substrate Binding Kinetics Indicate That Photolyase Recognizes an Extrahelical Cyclobutane Thymine Dimer", *Biochemistry* 54, 6176-6185, **2015**.
38. **A. Zieba**, C. Richardson, C. Lucero, **S. Dieng**, Y.M. Gindt, **J.P.M. Schelvis** "Evidence for Concerted Electron Proton Transfer in Charge Recombination between FADH⁻ and ³⁰⁶Trp[•] in DNA Photolyase", *J. Am. Chem. Soc.* 133, 7824-7836, **2011**.
37. **S.D. Dieng** and **J.P.M. Schelvis** "Analysis of Measured and Calculated Raman Spectra of Indole, 3-Methylindole, and Tryptophan on the Basis of Observed and Predicted Isotope Shifts" *J. Phys. Chem. A*, 114, 10897-10905, **2010**.

36. K. Sokolowsky, M. Newton, **C. Lucero**, B. Wertheim, J. Freedman, F. Cortazar, J. Czochor, **J.P.M. Schelvis**, and Y.M. Gindt "Spectroscopic and Thermodynamic Comparisons of *Escherichia coli* DNA Photolyase and *Vibrio cholerae* Cryptochrome 1" *J. Phys. Chem. B* 114, 7121-7130, **2010**.
35. J. Suarez, K. Ranguelova, **J.P.M. Schelvis**, and R.S. Magliozzo, "Antibiotic resistance in *M. tuberculosis*: Peroxidase intermediate bypass causes poor isoniazid activation by the Ser315Gly mutant of *M. tuberculosis* catalase-peroxidase (KatG)", *J. Biol. Chem.* 284, 16146-16155, **2009**.
34. X. Zhao, S. Yu, K. Ranguelova, J. Suarez, L. Metlitsky, **J. P. M. Schelvis**, and R. S. Magliozzo, "Role of the Oxyferrous Heme Intermediate and Distal Side Adduct Radical in the Catalase Activity of *Mycobacterium tuberculosis* KatG Revealed by the W107F Mutant", *J. Biol. Chem.* 284, 7030-7037, **2009**.
33. K. Ranguelova, J. Suarez, L. Metlitsky, S. Yu, S.Z. Brejt, S.Z. Brejt, L. Zhao, **J.P.M. Schelvis**, and R.S. Magliozzo, "Impact of distal side water and residue 315 on ligand binding to ferric *M. tuberculosis* catalase-peroxidase (KatG)", *Biochemistry* 47, 12583-12592, **2008**.
32. A.K. Murphy, M. Tamaro, F. Cortazar, Y.M. Gindt, and **J.P.M. Schelvis** "Effect of the Cytidine Cyclobutane Dimer on the Properties of *Escherichia coli* DNA Photolyase", *J. Phys. Chem. B* 112, 15217-15226, **2008**.
31. A.S. Eisenberg and **J.P.M. Schelvis** "Contributions of the 8-Methyl Group to the Vibrational Normal Modes of Flavin Mononucleotide and Its 5-Methyl Semiquinone Radical", *J. Phys. Chem. A*, 112, 6179-6189, **2008**.

Before September 2007

30. O. Sokolova, C. Cecala, A. Gopal, F. Cortazar, C. McDowell-Buchanan, A. Sancar, Y.M. Gindt, J.P.M. Schelvis "Resonance Raman Spectroscopic Investigation of the Light-Harvesting Chromophore in *Escherichia coli* Photolyase and *Vibrio cholerae* Cryptochrome-1", *Biochemistry*, 46, 3673-3681, **2007**.
29. S.M. Kapetanaki, X. Zhao, R.S. Magliozzo, J.P.M. Schelvis "Modification of the Active Site of *Mycobacterium tuberculosis* KatG after Disruption of the Met-Tyr-Trp Cross-Linked Adduct" *J. Inorg. Biochem.*, 101, 422-433, **2007**.
28. J.P.M. Schelvis, D. Pun, N. Goyal, O. Sokolova "Resonance Raman Spectroscopy of the Neutral and Anionic Radical Semiquinones of Flavin Adenine Dinucleotide in Glucose Oxidase Revisited" *J. Raman Spectrosc.*, 37, 822-829, **2006**.
27. E. Del Federico, W. Schöfberger, J.P.M. Schelvis, S.M. Kapetanaki, L. Tyne, A. Jerschow "Insight into Framework Destruction in Ultramarine Pigments" *Inorg. Chem.*, 45, 1270-1276, **2006**.
26. Y.M. Gindt, J.P.M. Schelvis, K.L. Thoren, T.H. Huang "Substrate Binding Modulates the Reduction Potential of DNA Photolyase" *J. Am. Chem. Soc.*, 127, 10472-10473, **2005**.
25. S.M. Kapetanaki, S. Chouchane, S. Yu, R.S. Magliozzo, J.P.M. Schelvis "Resonance Raman Spectroscopy of Compound II and its Decay in *Mycobacterium tuberculosis* Catalase-Peroxidase and its Isoniazid Resistant Mutant S315T" *J. Inorg. Biochem.*, 99, 1401-1406, **2005**.
24. S.M. Kapetanaki, S. Chouchane, S. Yu, X. Zhao, R.S. Magliozzo, and J.P.M. Schelvis "Mycobacterium tuberculosis KatG(S315T) catalase-peroxidase retains all active site properties for proper catalytic function" *Biochemistry*, 44, 243-252, **2005**.

23. U. Gurudas, J.P.M. Schelvis "Resonance Raman Spectroscopy of the Neutral Radical Trp306 in DNA Photolyase" *J. Am. Chem. Soc.*, 126, 12788-12789, **2004**.
22. S.M. Kapetanaki, M.R. Ramsey, Y.M. Gindt, J.P.M. Schelvis "Substrate Electric Field Exerts a pH-Dependence Effect on Electron Transfer in *Escherichia coli* Photolyase" *J. Am. Chem. Soc.*, 126, 6214-6215, **2004**.
21. Z. Chen, T.W.B. Ost, J.P.M. Schelvis "Phe393 mutants of cytochrome P450 BM3 with modified heme redox potentials have altered heme vinyl and propionate conformations" *Biochemistry*, 43, 1798-1808, **2004**.
20. J.P.M. Schelvis, M. Ramsey, O. Sokolova, C. Tavares, C. Cecela, K. Connell, S. Wagner, Y.M. Gindt "Resonance Raman and UV-vis Spectroscopic Characterization of the Complex of Photolyase with UV-damaged DNA" *J. Phys. Chem. B.*, 107, 12352-12362, **2003**.
19. S.M. Kapetanaki, S. Chouchane, S. Giroto, S. Yu, R.S. Magliozzo, J.P.M. Schelvis "Conformational Differences in *M. tuberculosis* Catalase-Peroxidase KatG and Its S315T Mutant Revealed by Resonance Raman Spectroscopy" *Biochemistry*, 42, 3835-3845, **2003**.
18. Z. Chen, L.-H. Wang, J.P.M. Schelvis "Resonance Raman Investigation of the Interaction of Thromboxane Synthase with Substrate Analogs" *Biochemistry*, 42, 2542-2551, **2003**.
17. S. Chouchane, S. Giroto, S.M. Kapetanaki, J.P.M. Schelvis, S. Yu, R.S. Magliozzo "Analysis of Heme Structural Changes in *M. tuberculosis* Catalase-Peroxidase (KatG) during Isolation, Purification, and Storage" *J. Biol. Chem.*, 278, 8154-8162, **2003**.
16. J.P.M. Schelvis, V. Berka, G.T. Babcock, A.L. Tsai "Resonance Raman Detection of the Fe-S bond in Endothelial Nitric Oxide Synthase" *Biochemistry*, 41, 5695-5701, **2002**.
15. J.P.M. Schelvis, S.A. Seibold, J.F. Cerda, R.M. Garavito, G.T. Babcock "Interaction of Nitric Oxide with Prostaglandin Endoperoxide H Synthase-1. Implication for Fe-His Bond Cleavage in Heme Proteins." *J. Phys Chem. B.*, 104, 10844-10850, **2000**.
14. Y. Zhao, P.E. Brandish, M. Divalentin, J.P.M. Schelvis, G. T. Babcock, M.A. Marletta "Inhibition of Soluble Guanylate Cyclase by ODO." *Biochemistry*, 39, 10848-10854, **2000**.
13. J.P.M. Schelvis, C.A. Varotsis "Picosecond Resonance Raman Evidence of the Structure of the Excited State of Heme *o*" *Chem. Phys. Lett.*, 321, 37-42, **2000**.
12. J.W. Denninger, J.P.M. Schelvis, P.E. Brandish, Y. Zhao, G.T. Babcock, M.A. Marletta "Interaction of Soluble Guanylate Cyclase Activation with YC-1: Kinetic and Resonance Raman Studies" *Biochemistry*, 39, 4191-4198, **2000**.
11. J.P.M. Schelvis, S. Kim, Y. Zhao, M. Marletta, G.T. Babcock "Structural Dynamics in the Guanylate Cyclase Heme Pocket after CO Photolysis" *J. Am. Chem. Soc.*, 121, 7397-7400, **1999**.
10. R.W. Busby, J.P.M. Schelvis, D. S. Yu, G.T. Babcock, M.A. Marletta "Lipoic Acid Biosynthesis: LipA is an Iron-Sulfur Protein" *J. Am. Chem. Soc.*, 121, 4706-4707, **1999**.
9. J.P.M. Schelvis, Y. Zhao, M. Marletta, G. T. Babcock "Resonance Raman Characterization of the Heme Domain of Soluble Guanylate Cyclase." *Biochemistry*, 37, 16289-16297, **1998**.
8. Y. Zhao, J.P.M. Schelvis, G.T. Babcock, M. Marletta "Identification of Histidine 105 in the β 1 Subunit of Soluble Guanylate Cyclase as the Heme Proximal Ligand." *Biochemistry*, 37, 4502-4509, **1998**.
7. J.P.M. Schelvis, G.Deinum, C.A. Varotsis, S. Ferguson-Miller, G.T. Babcock "Low-power picosecond resonance Raman evidence for histidine ligation to heme a_3 after photodissociation of CO from cytochrome *c* oxidase" *J. Am. Chem. Soc.*, 119, 8409-8416, **1997**.

6. J.P.M. Schelvis, M. Germano, T.J. Aartsma, H.J. van Gorkom "Energy transfer and trapping in Photosystem II core complexes with closed reaction centers" *Biochim. Biophys. Acta*, 1230, 165-169, **1995**.
5. J.P.M. Schelvis, T.J. Aartsma "Transient absorption changes induced by exciton scattering; Implications for Photosystem II of photosynthesis" *Chem. Phys.*, 194, 303-309, **1995**.
4. S. Shochat, C. Francke, P. Gast, P.I. van Noort, S.C.M. Otte, J.P.M. Schelvis, S. Schmidt, E. Vijgenboom, J. Vrieze, W. Zinth, A.J. Hoff "Spectroscopic characterization of reaction centers of the (M)Y210W mutant of the photosynthetic bacterium *Rhodobacter sphaeroides*." *Photosynth. Res.*, 40, 55-66, **1994**.
3. J.P.M. Schelvis, P.I. van Noort, T.J. Aartsma, H.J. van Gorkom "Energy transfer, charge separation and pigment arrangement in the reaction center of Photosystem II" *Biochim. Biophys. Acta*, 1184, 242-250, **1994**.
2. H.J. van Gorkom, J.P.M. Schelvis "Kok's oxygen clock: What makes it tick? The structure of P680 and consequences of its oxidizing power" *Photosynth. Res.*, 38, 297-301, **1993**.
1. J.P.M. Schelvis, B.-L. Liu, T.J. Aartsma, A.J. Hoff "The electron transfer rate of BPh_A⁻ to Q_A in reaction centers of *Rhodobacter sphaeroides* R-26: Influence of the H-subunit, the Q_A and Fe²⁺ cofactors, and the isoprene tail of Q_A" *Biochim. Biophys. Acta*, 1102, 229-236, **1992**.

PROCEEDINGS ARTICLES (undergraduate coauthors underlined, MSU bold)

- **J.P.M. Schelvis**, **C. Lucero**, A. Eisenberg, and Y.M. Gindt "Resonance Raman Characterization of the Flavin Radical in Cryptochrome DASH" in Proceedings of the XXIInd International Conference on Raman Spectroscopy, Champion, P.M., Ziegler, L.D., Eds., 284-285, **2010**.

Before September 2007

- U. Gurudas and J.P.M. Schelvis "Detection of a tryptophan neutral radical in DNA photolyase by resonance Raman spectroscopy", Proceedings of the XIIth Time-Resolved Vibrational Spectroscopy Conference, Heilweil, E. and Gustafson, T., Eds., on-line Proceedings Book at NIST, pp. 16-18, 2005:
<http://physics.nist.gov/Divisions/Div844/events/TRVS/PDF/TRVS-XII-Proceedings-F.pdf>
- E. Del Federico, W. Schoefberger, R. Kumar, W. Ling, S.M. Kapetanaki, J.P.M. Schelvis, A. Jerschow "Solid-State NMR and Resonance Raman Studies of Ultramarine Pigments", Mater. Res. Soc. Symp. Proc. Vol. 852, 247-254, 2005.
- J.P.M. Schelvis, O. Sokolova, A. Gopal, N. Goyal, S. Wagner, K. Connell, Y.M. Gindt "Resonance Raman Investigation of DNA Photolyase" in Proc. XVIIIth Int. Conf. on Raman Spectrosc., Mink. J., Jalsovszky G., Keresztury G., Eds., 773-774, 2002.
- S.M. Kapetanaki, J.P.M. Schelvis, S. Chouchane, S. Giroto, R.S. Magliozzo "Resonance Raman Investigation of Ferric *M. tuberculosis* Catalase-Peroxidase KatG and Its Isoniazid Complex" in Proc. XVIIIth Int. Conf. on Raman Spectrosc., Mink. J., Jalsovszky G., Keresztury G., Eds., 751-752, 2002.
- J.P.M. Schelvis, C. Varotsis, G. Deinum, G.T. Babcock "CO Photolysis of Cytochrome Oxidase Investigated by ps Resonance Raman Spectroscopy", Laser Chem. 19, 223-225, 1999.
- G.T. Babcock, G. Deinum, J. Hosler, Y. Kim, M. Pressler, D. Proshlyakov, H. Schelvis, C. Varotsis, S. Ferguson-Miller "Ligand Dynamics in the Binuclear Site in Cytochrome Oxidase"

- in Oxygen Homeostasis and Its Dynamics, Y. Ishimura, Ed., Springer-Verlag, Tokyo, pp. 47-56, 1997.
- J.P.M. Schelvis, M. Germano, T.J. Aartsma, H.J. van Gorkom "The role of long-wavelength antenna pigments in energy transfer in Photosystem II" in Photosynthesis: from Light to Biosphere, Vol. I, P. Mathis (ed.), Kluwer Academic Publishers, Dordrecht, pp. 507-510, 1995.
- S. Shochat, P.I. van Noort, R. van der Vos, S.C.M. Otte, H. Schelvis, J. Vrieze, F.A.M. Kleinherenbrink, P. Gast, A.J. Hoff "Spectroscopic Characterization of Reaction Centers of the MTyr210 to Trp Mutant of Rhodobacter sphaeroides" in Research in Photosynthesis, Vol. I, N. Murata (ed.), Kluwer Academic Publishers, Dordrecht, pp. 413-416, 1992.
- J.P.M. Schelvis, P.I. van Noort, T.J. Aartsma, H.J. van Gorkom "The origin of the 30 ps lifetime component in the Photosystem II D1-D2-cytb559 complex" in Research in Photosynthesis, Vol. II, N. Murata (ed.), Kluwer Academic Publishers, Dordrecht, pp. 81-84, 1992.

PROFESSIONAL PRESENTATIONS/ABSTRACTS

Invited Presentations

- "Evidence for Concerted Electron Proton Transfer Between FADH⁻ and ³⁰⁶Trp• in *Escherichia coli* Photolyase" 17th International Conference on Flavins & Flavoproteins, July 24 – 29, 2011.
- "Resonance Raman Characterization of the Flavin Radical in Cryptochrome DASH" XXIInd International Conference on Raman Spectroscopy, August 8-13, **2010**
- "Spectroscopic Comparison of FADH• and Charge Recombination in CPD Photolyase and Cryptochrome DASH" Workshop: Photolyase Fest 2010, Temple University, Philadelphia, July 30, **2010**.
- "Resonance Raman Characterization of the Interaction of Thromboxane Synthase and Prostacyclin Synthase with Substrate Analogs" 2nd Georgian Bay International Conference on Bioinorganic Chemistry, May 26-29, **2009**, Parry Sound, Ontario, Canada
- "DNA repair with light: New insight into the mechanism of DNA photolyase" Department of Chemistry, Marquette University, Milwaukee, WI, November 7, **2008**
- "Effect of Heme Vinyl Conformation on the Heme Reduction Potential in Cytochrome P450 BM3" 1st Georgian Bay International Conference on Bioinorganic Chemistry, May 22-25, **2007**, Parry Sound, Ontario, Canada
- "Flavin Radicals in Solution and in Proteins: Resonance Raman Spectroscopy and DFT Analysis" XXth International Conference on Raman Spectroscopy, August 20-25, **2006**, Yokohama, Japan.
- "Characterization of Flavin Excited States and Tryptophan Radicals by Time-Resolved Resonance Raman Spectroscopy with Application to DNA Photolyase" Workshop on Protein Dynamics and Biological Applications of Time-Resolved Spectroscopy, August 18-19, **2006**, Kobe, Japan.
- "DNA repair by photolyase: Better understanding through spectroscopy" 781st Lehigh Valley ACS Meeting at Lafayette College, September 22, **2005**, Easton, PA.
- "Modification of the Active Site Properties in the Photolyase/Damaged-DNA Complex" 230th National Meeting of the American Chemical Society, 'Frontiers in Photobiology Symposium', August 28 – September 1, **2005**, Washington, DC

- "Detection of a Tryptophan Neutral Radical in DNA Photolyase by Resonance Raman Spectroscopy" XIIth International Conference on Time-Resolved Vibrational Spectroscopy, May 23-27, **2005**, Gaithersburg, MD

Oral Presentations (other)

- "Application of Resonance Energy Transfer to Study Binding of DNA Photolyase to UV-Damaged DNA" ACS Mid-Atlantic Regional Meeting, May 16, **2007**, Ursinus College, Colledgeville, PA.
- "Resonance Raman Spectroscopy of Flavin and Tryptophan Radicals in the DNA Repair Enzyme Photolyase" 3rd International Conference on Advances in Vibrational Spectroscopy, August 14-19, **2005**, Delavan, WI
- "Time-Resolved Resonance Raman Characterization of a Neutral Tryptophan Radical in DNA Photolyase. Effect of Substrate Electric Field on Its Lifetime" Gordon Research Conference: Protein Derived Cofactors, Radicals, and Quinones, January 10-16, **2004**, Ventura, CA (poster talk)
- "Resonance Raman Investigation of DNA Photolyase" XVIIIth International Conference on Raman Spectroscopy, August 25-30, **2002**, Budapest, Hungary
- "YC-1 induces a structural change in the heme pocket of soluble guanylate cyclase" 217th American Chemical Society National Meeting, March 20-24, **1999**, Anaheim, California.
- "The role of long-wavelength antenna pigments in energy transfer in Photosystem II" Midwest Photosynthesis Meeting, October 29-31, **1995**, Marshall, Indiana.
- "Energy transfer, charge separation and pigment arrangement in the reaction center of Photosystem II" European Science Foundation Topical Workshop, August 25-27, **1993**, Mülheim a.d. Ruhr, Germany.

TEACHING EXPERIENCE AT MSU

CHEM 100: Introductory Chemistry, Fall 07

CHEM 106: Principles of Chemistry, Fall 16, 18, 20, 22

CHEM 120: General Chemistry, Fall 08, 09, 11, 18, 19, 20, 21, 22, Summer 19

CHEM 311: Instrumental Analysis, Spring 2008-2023

CHEM 546: Chemical Spectroscopy, Fall 10

CHEM 546: Chemical Spectroscopy: Independent Study, Spring 08

CHEM 560: Advanced Analytical Chemistry, Fall 15, 17, 19, 21

CHEM 570: Advanced Biochemistry – Application of Spectroscopy in Biochemistry, Fall 07

HONP 210: Honors Science Seminar, Fall 2012-2014

ASSOCIATION MEMBERSHIPS

American Chemical Society (Physical Division, New Jersey Section)

Biophysical Society (Bioenergetics and Molecular Biophysics Subgroup)

American Physical Society

Dutch Physical Society