Stanford



Steven Boxer

Camille Dreyfus Professor of Chemistry

Resume available Online

CONTACT INFORMATION

- **Administrative contact**

  Oxana Chechetina - Administrative assistant

  Email oxana292@stanford.edu

  Tel 650-725-9741

Bio

BIO

My laboratory investigates the structure and function of biological systems with a strong physical perspective. We invent experimental methods and develop theory as needed. We are pursuing several interconnected themes:

Electrostatics and Dynamics in Proteins

We study electrostatics in proteins and how electric fields affect function. Early test systems used mutants of myoglobin, which was first cloned and expressed in our lab. This led to probes whose sensitivity to electric fields can be calibrated by Stark spectroscopy — spectroscopy in electric fields — which we have developed into a broadly applicable method. Vibrational Stark experiments exploit molecular vibrations as local and directional probes to map electrostatic fields in proteins. These probes include nitriles (CN), carbonyls (C=O) and C-D. These can be used to probe electrostatics and to make direct comparisons and tests of simulations. Recent work focuses on carbonyl probes to study enzymatic reactions. By combining the vibrational Stark effect, vibrational solvatochromism and MD simulations, we have developed a general method to measure the absolute field sensed by the carbonyl probe in proteins. This has been used to quantify the electrostatic contribution to the catalytic rate in several enzymes.

Excited State Dynamics in GFP and Quantum Biology

Green Fluorescent Protein (GFP) is widely used as a probe to localize proteins in cells. Our lab was the first to demonstrate that the GFP chromophore exists in two protonation states, interconvertible by ultrafast excited state proton transfer. We and others have since developed this idea to generate novel GFP variants with diverse colors and sensitivities. The GFP chromophore has proven to be a sensitive probe for electrostatics inside the proteins. Modifications of the chromophore using non-canonical amino acids and environmental perturbations have been used to probe the role of electrostatics in chromophore photoisomerization. The discovery that fluorescence from red fluorescent proteins (RFPs) in the presence of flavins depends on external

magnetic fields has returned our lab to earlier work on magnetic field effects that arise from spin-correlated radical pairs. Understanding the origin(s) of these effects may help to develop these effects as an imaging method.

Model Membranes

Our group has developed supported lipid bilayers as mimics for cell surfaces and tools in biotechnology. A broad vision is to engineer interfaces between hard surfaces and soft materials, ultimately leading to sophisticated biocompatible interfaces that can be used to control, interrogate or organize complex living systems. We have developed methods to partition and manipulate elements of these unique self-assembled systems; these methods are now used in many laboratories.

Recent work addresses three interrelated areas: 1) characterization of membrane organization, domains and protein associations using a novel type of imaging mass spectrometry; 2) models for membrane fusion and investigations into the fusion of enveloped viruses and lipid nanoparticles to their target membrane; 3) development of tethered lipid bilayers as a platform to study membrane domains and junction topology and organization between supported membranes and natural cell membranes.

Energy and Electron Transfer in Photosynthesis

Light-driven long-distance electron transfer in photosynthetic reaction centers is one of the fastest known chemical reactions. We studied this by femtosecond fluorescence and transient absorption spectroscopy, manipulation in electric fields, site-specific and global mutagenesis and some novel types of Stark spectroscopy. While this phase of our work is complete, we continue to use elements of the photosynthetic apparatus to study the electric fields in membranes created in response to transmembrane potential.

ACADEMIC APPOINTMENTS

- Professor, Chemistry
- Member, Bio-X
- Faculty Fellow, Sarafan ChEM-H
- Member, Wu Tsai Neurosciences Institute

ADMINISTRATIVE APPOINTMENTS

- Chair, Department of Chemistry, Stanford, (2020-2025)
- Founder and Director Stanford Graduate, Biophysics Program, (1988-1999)

HONORS AND AWARDS

- ACS Nakanishi Prize, ACS (2025)
- Honorary Doctor of Science, Tufts University (2025)
- Biophysical Society Founders Award, Biophysical Society (2024)
- Ellis R. Lippincott Award, Optical Society (2024)
- Murray Goodman Memorial Prize, American Chemical Society (2014)
- E. Bright Wilson Award in Spectroscopy, American Chemical Society (2013)
- Elected Fellow, Royal Society of Chemistry (2009)
- Elected Member, National Academy of Sciences (2008)

- Earle K. Plyler Prize for Molecular Spectroscopy, American Physical Society (2008)
- Elected Fellow, Biophysical Society (2007)
- Elected Fellow, American Academy of Arts and Sciences (1997)
- Elected Fellow, American Association for the Advancement of Science (1997)
- Arthur Cope Scholar Award, American Chemical Society (1995)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Chair, Scientific Advisory Board, IDMxS, NTU Singapore (2025 - present)
- International Advisory Committee, Department of Chemistry, Tsinghua University (2023 - present)

PROFESSIONAL EDUCATION

- PhD, University of Chicago , Physical and Physical-Organic Chemistry (1976)
- BS with Honors, Tufts University , Chemistry (1969)

LINKS

- Lab Website: https://web.stanford.edu/group/boxer/

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Please visit my website for complete information:

http://www.stanford.edu/group/boxer/

Teaching

COURSES

2026-27

- Advanced Physical Chemistry: CHEM 271 (Aut)
- Physical Chemistry II: CHEM 173 (Aut)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Krystal Brodsky, Joshua Sampson, Pengwei Sun, Nancy Zhu

Postdoctoral Faculty Sponsor

Mojgan Asadi, Cristina-Valentina Craescu, Suman Gunasekaran, Marc Henri K Joiret, Srijit Mukherjee, Bing Xu

Doctoral Dissertation Advisor (AC)

Nahal Bagheri, Steven Fried, Nathalie Hong, My Uyen Ta

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Biophysics (PhD Program)

Publications

PUBLICATIONS

- **A comprehensive test of the AMOEBA force field using spectroscopy, structures, and simulations of nitrile protein environments.** *The Journal of chemical physics*
  Kirsh, J. M., Weaver, J. B., Kozuch, J., Boxer, S. G.
  2026; 164 (15)

- **Magnetic resonance control of spin-correlated radical pair dynamics in vivo.** *Nature*
  Burd, S. C., Bagheri, N., Condon, A. F., Ingaramo, M., Mondal, S., Dowlatshahi, D. P., Summers, J. A., Mukherjee, S., York, A. G., Wakatsuki, S., Boxer, S. G., Kasevich, M.
  2026

- **Covalent Drug Binding in Live Cells Monitored by Mid-Infrared Quantum Cascade Laser Spectroscopy: Photoactive Yellow Protein as a Model System.** *Journal of the American Chemical Society*
  Mukherjee, S., Fried, S. D., Hong, N. Y., Bagheri, N., Kozuch, J., Mathews, I. I., Kirsh, J. M., Boxer, S. G.
  2025

- **Electrostatic atlas of non-covalent interactions built into metal-organic frameworks.** *Nature chemistry*
  Ji, Z., Mukherjee, S., Andreo, J., Sinelshchikova, A., Peccati, F., Jiménez-Osés, G., Wuttke, S., Boxer, S. G.
  2025

- **Covalent Drug Binding in Live Cells Monitored by Mid-IR Quantum Cascade Laser Spectroscopy: Photoactive Yellow Protein as a Model System.** *bioRxiv : the preprint server for biology*
  Mukherjee, S., Fried, S. D., Hong, N. Y., Bagheri, N., Kozuch, J., Mathews, I. I., Kirsh, J. M., Boxer, S. G.
  2025

- **Introduction: Electric Fields in Chemistry and Biology.** *Chemical reviews*
  Boxer, S. G., Head-Gordon, T.
  2025; 125 (15): 6871-6873

- **US must support chemistry research.** *Science (New York, N.Y.)*
  Allen, K., Armentrout, P. B., Berkman, C., Boxer, S. G., Burkart, M., Canary, J. W., Castellano, R. K., Columbus, L., DeRose, V. J., Fairbrother, H., Ferguson, G. S., Foley, J., Haynes, et al
  2025; 388 (6753): 1282-1283

- **Magnetic resonance control of reaction yields through genetically-encoded protein:flavin spin-correlated radicals in a live animal.** *bioRxiv : the preprint server for biology*
  Burd, S. C., Bagheri, N., Ingaramo, M., Condon, A. F., Mondal, S., Dowlatshahi, D. P., Summers, J. A., Mukherjee, S., York, A. G., Wakatsuki, S., Boxer, S. G., Kasevich, M.
  2025

- **Environment- and Conformation-Induced Frequency Shifts of C-D Vibrational Stark Probes in NAD(P)H Cofactors.** *The journal of physical chemistry letters*
  Fried, S. D., Mukherjee, S., Mao, Y., Boxer, S. G.
  2024: 10826-10834

- **Structure-function relationships in pure archaeal bipolar tetraether lipids.** *Chemical science*
  Bhattacharya, A., Falk, I. D., Moss, F. R., Weiss, T. M., Tran, K. N., Burns, N. Z., Boxer, S. G.
  2024

- **A Fluorogenic Pseudoinfection Assay to Probe Transfer and Distribution of Influenza Viral Contents to Target Vesicles.** *Analytical chemistry*
  Bhattacharya, A., Bagheri, N., Boxer, S. G.
  2024

- **Membrane localization accelerates association under conditions relevant to cellular signaling.** *Proceedings of the National Academy of Sciences of the United States of America*
  Huang, W. Y., Boxer, S. G., Ferrell, J. E.
  2024; 121 (10): e2319491121

- **Critical Evaluation of Polarizable and Nonpolarizable Force Fields for Proteins Using Experimentally Derived Nitrile Electric Fields.** *Journal of the American Chemical Society*
  Kirsh, J. M., Weaver, J. B., Boxer, S. G., Kozuch, J.
  2024
- **Secondary Ion Mass Spectrometry of Single Giant Unilamellar Vesicles Reveals Compositional Variability.** *Journal of the American Chemical Society*
  Grusky, D. S., Bhattacharya, A., Boxer, S. G.
  2023
- **Simulation-guided engineering of split GFPs with efficient β-strand photodissociation.** *Nature communications*
  Shamsudin, Y., Walker, A. R., Jones, C. M., Martínez, T. J., Boxer, S. G.
  2023; 14 (1): 7401
- **Autobiography of Steven G. Boxer.** *The journal of physical chemistry. B*
  Boxer, S. G.
  2023; 127 (41): 8711-8716
- **Enhanced active-site electric field accelerates enzyme catalysis.** *Nature chemistry*
  Zheng, C., Ji, Z., Mathews, I. I., Boxer, S. G.
  2023
- **beta-Lactamases Evolve against Antibiotics by Acquiring Large Active-Site Electric Fields.** *Journal of the American Chemical Society*
  Ji, Z., Boxer, S. G.
  2022
- **Protein Electric Fields Enable Faster and Longer-Lasting Covalent Inhibition of β-Lactamases.** *Journal of the American Chemical Society*
  Ji, Z., Kozuch, J., Mathews, I. I., Diercks, C. S., Shamsudin, Y., Schulz, M. A., Boxer, S. G.
  2022
- **Solvent Organization and Electrostatics Tuned by Solute Electronic Structure: Amide versus Non-Amide Carbonyls.** *The journal of physical chemistry. B*
  Fried, S. D., Zheng, C., Mao, Y., Markland, T. E., Boxer, S. G.
  2022
- **Recombination between 13C and 2H to Form Acetylide (13C22H-) Probes' Nanoscale Interactions in Lipid Bilayers via Dynamic Secondary Ion Mass Spectrometry: Cholesterol and GM1 Clustering.** *Analytical chemistry*
  Grusky, D. S., Moss, F. R., Boxer, S. G.
  2022
- **A two-directional vibrational probe reveals different electric field orientations in solution and an enzyme active site.** *Nature chemistry*
  Zheng, C., Mao, Y., Kozuch, J., Atsango, A. O., Ji, Z., Markland, T. E., Boxer, S. G.
  2022
- **Nitrile Infrared Intensities Characterize Electric Fields and Hydrogen Bonding in Protic, Aprotic, and Protein Environments.** *Journal of the American Chemical Society*
  Weaver, J. B., Kozuch, J., Kirsh, J. M., Boxer, S. G.
  2022
- **Energetic Basis and Design of Enzyme Function Demonstrated Using GFP, an Excited-State Enzyme.** *Journal of the American Chemical Society*
  Lin, C., Romei, M. G., Mathews, I. I., Boxer, S. G.
  2022
- **The Interplay of Electrostatics and Chemical Positioning in the Evolution of Antibiotic Resistance in TEM beta-Lactamases.** *ACS central science*
  Schneider, S. H., Kozuch, J., Boxer, S. G.
  1800; 7 (12): 1996-2008
- **Photosynthetic reaction center variants made via genetic code expansion show Tyr at M210 tunes the initial electron transfer mechanism.** *Proceedings of the National Academy of Sciences of the United States of America*

Weaver, J. B., Lin, C., Faries, K. M., Mathews, I. I., Russi, S., Holten, D., Kirmaier, C., Boxer, S. G.
1800; 118 (51)

- **Single-virus content mixing assay reveals cholesterol-enhanced influenza membrane fusion efficiency.** *Biophysical journal*
  Liu, K. N., Boxer, S. G.
  2021
- **Testing the Limitations of MD-Based Local Electric Fields Using the Vibrational Stark Effect in Solution: Penicillin G as a Test Case.** *The journal of physical chemistry. B*
  Kozuch, J., Schneider, S. H., Zheng, C., Ji, Z., Bradshaw, R. T., Boxer, S. G.
  2021
- **Enantioselective Total Synthesis of the Archaeal Lipid Parallel GDGT-0 (Isocaldarchaeol).** *Angewandte Chemie (International ed. in English)*
  Falk, I. D., Gál, B. n., Bhattacharya, A. n., Wei, J. H., Welander, P. V., Boxer, S. G., Burns, N. Z.
  2021
- **Unusual Spectroscopic and Electric Field Sensitivity of Chromophores with Short Hydrogen Bonds: GFP and PYP as Model Systems.** *The journal of physical chemistry. B*
  Lin, C., Boxer, S. G.
  2020
- **Mechanism of Color and Photoacidity Tuning for the Protonated Green Fluorescent Protein Chromophore.** *Journal of the American Chemical Society*
  Lin, C., Boxer, S. G.
  2020
- **Membrane-tethered mucin-like polypeptides sterically inhibit binding and slow fusion kinetics of influenza A virus.** *Proceedings of the National Academy of Sciences of the United States of America*
  Delaveris, C. S., Webster, E. R., Banik, S. M., Boxer, S. G., Bertozzi, C. R.
  2020
- **Electrostatic control of photoisomerization pathways in proteins.** *Science (New York, N.Y.)*
  Romei, M. G., Lin, C. Y., Mathews, I. I., Boxer, S. G.
  2020; 367 (6473): 76–79
- **A Preorganized Electric Field Leads to Minimal Geometrical Reorientation in the Catalytic Reaction of Ketosteroid Isomerase.** *Journal of the American Chemical Society*
  Wu, Y. n., Fried, S. D., Boxer, S. G.
  2020
- **Biosynthetic Incorporation of Site-Specific Isotopes in β-Lactam Antibiotics Enables Biophysical Studies.** *ACS chemical biology*
  Kozuch, J. n., Schneider, S. H., Boxer, S. G.
  2020
- **Split Green Fluorescent Proteins: Scope, Limitations, and Outlook.** *Annual review of biophysics*
  Romei, M. G., Boxer, S. G.
  2019
- **Local and Global Electric Field Asymmetry in Photosynthetic Reaction Centers.** *The journal of physical chemistry. B*
  Saggu, M., Fried, S. D., Boxer, S. G.
  2019
- **Structural Evidence of Photoisomerization Pathways in Fluorescent Proteins.** *Journal of the American Chemical Society*
  Chang, J. n., Romei, M. G., Boxer, S. G.
  2019
- **A unified model for photophysical and electro-optical properties of Green Fluorescent Proteins.** *Journal of the American Chemical Society*
  Lin, C. Y., Romei, M. G., Oltrogge, L. M., Mathews, I. I., Boxer, S. G.
  2019
- **pH Dependence of Zika Membrane Fusion Kinetics Reveals an Off-Pathway State** *ACS CENTRAL SCIENCE*

Rawle, R. J., Webster, E. R., Jelen, M., Kasson, P. M., Boxer, S. G.
2018; 4 (11): 1503–10

- **pH Dependence of Zika Membrane Fusion Kinetics Reveals an Off-Pathway State.** *ACS central science*
  Rawle, R. J., Webster, E. R., Jelen, M., Kasson, P. M., Boxer, S. G.
  2018; 4 (11): 1503-1510
- **Ladderane phospholipids form a densely packed membrane with normal hydrazine and anomalously low proton/hydroxide permeability.** *Proceedings of the National Academy of Sciences of the United States of America*
  Moss, F. R., Shuken, S. R., Mercer, J. A., Cohen, C. M., Weiss, T. M., Boxer, S. G., Burns, N. Z.
  2018
- **Ladderane phospholipids form dense, low-polarity membranes with low proton/hydroxide permeability**
  Moss, F., Shuken, S., Mercer, J., Cohen, C., Weiss, T., Burns, N., Boxer, S.
  AMER CHEMICAL SOC.2018
- **Genetic Code Expansion in Rhodobacter sphaeroides to Incorporate Noncanonical Amino Acids into Photosynthetic Reaction Centers.** *ACS synthetic biology*
  Weaver, J. B., Boxer, S. G.
  2018
- **Structural Insight into the Photochemistry of Split Green Fluorescent Proteins: A Unique Role for a His-Tag** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Deng, A., Boxer, S. G.
  2018; 140 (1): 375–81
- **Vesicle Fusion Mediated by Solanesol-Anchored DNA** *BIOPHYSICAL JOURNAL*
  Flavier, K. M., Boxer, S. G.
  2017; 113 (6): 1260–68
- **Atomic Recombination in Dynamic Secondary Ion Mass Spectrometry Probes Distance in Lipid Assemblies: A Nanometer Chemical Ruler** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Moss, F. R., Boxer, S. G.
  2016; 138 (51): 16737-16744
- **Vibrational Stark Effects of Carbonyl Probes Applied to Reinterpret IR and Raman Data for Enzyme Inhibitors in Terms of Electric Fields at the Active Site.** *journal of physical chemistry. B*
  Schneider, S. H., Boxer, S. G.
  2016; 120 (36): 9672-9684
- **A Critical Test of the Electrostatic Contribution to Catalysis with Noncanonical Amino Acids in Ketosteroid Isomerase.** *Journal of the American Chemical Society*
  Wu, Y., Boxer, S. G.
  2016; 138 (36): 11890-11895
- **Dynamic Reorganization and Correlation among Lipid Raft Components.** *Journal of the American Chemical Society*
  Lozano, M. M., Hovis, J. S., Moss, F. R., Boxer, S. G.
  2016; 138 (31): 9996-10001
- **Disentangling Viral Membrane Fusion from Receptor Binding Using Synthetic DNA-Lipid Conjugates.** *Biophysical journal*
  Rawle, R. J., Boxer, S. G., Kasson, P. M.
  2016; 111 (1): 123-131
- **Short Hydrogen Bonds and Proton Delocalization in Green Fluorescent Protein (GFP).** *ACS central science*
  Oltrogge, L. M., Boxer, S. G.
  2015; 1 (3): 148-156
- **Measuring Electric Fields and Noncovalent Interactions Using the Vibrational Stark Effect** *ACCOUNTS OF CHEMICAL RESEARCH*
  Fried, S. D., Boxer, S. G.
  2015; 48 (4): 998-1006

- **Quantum delocalization of protons in the hydrogen-bond network of an enzyme active site.** *Proceedings of the National Academy of Sciences of the United States of America*
  Wang, L., Fried, S. D., Boxer, S. G., Markland, T. E.
  2014; 111 (52): 18454-18459
- **Extreme electric fields power catalysis in the active site of ketosteroid isomerase** *SCIENCE*
  Fried, S. D., Bagchi, S., Boxer, S. G.
  2014; 346 (6216): 1510-1514
- **Ground-state proton transfer kinetics in green fluorescent protein.** *Biochemistry*
  Oltrogge, L. M., Wang, Q., Boxer, S. G.
  2014; 53 (37): 5947-5957
- **Putative Hydrogen Bond to Tyrosine M208 in Photosynthetic Reaction Centers from Rhodobacter capsulatus Significantly Slows Primary Charge Separation** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Saggu, M., Carter, B., Zhou, X., Faries, K., Cegelski, L., Holten, D., Boxer, S. G., Kirmaier, C.
  2014; 118 (24): 6721-6732
- **A conserved water-mediated hydrogen bond network defines bosutinib's kinase selectivity.** *Nature chemical biology*
  Levinson, N. M., Boxer, S. G.
  2014; 10 (2): 127-132
- **Choose your label wisely: water-soluble fluorophores often interact with lipid bilayers.** *PloS one*
  Hughes, L. D., Rawle, R. J., Boxer, S. G.
  2014; 9 (2)
- **Calculations of the electric fields in liquid solutions.** *journal of physical chemistry. B*
  Fried, S. D., Wang, L., Boxer, S. G., Ren, P., Pande, V. S.
  2013; 117 (50): 16236-16248
- **GFP Variants with Alternative beta-Strands and Their Application as Light-driven Protease Sensors: A Tale of Two Tails** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Do, K., Boxer, S. G.
  2013; 135 (28): 10226-10229
- **Individual Vesicle Fusion Events Mediated by Lipid-Anchored DNA** *BIOPHYSICAL JOURNAL*
  van Lengerich, B., Rawle, R. J., Bendix, P. M., Boxer, S. G.
  2013; 105 (2): 409-419
- **Colocalization of the Ganglioside G(M1) and Cholesterol Detected by Secondary Ion Mass Spectrometry** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Lozano, M. M., Liu, Z., Sunnick, E., Janshoff, A., Kumar, K., Boxer, S. G.
  2013; 135 (15): 5620-5630
- **Electrostatic insights into X-H•••π interactions (X = C, N, O, S) through the vibrational Stark effect**
  Ta, U. M., Fried, S. D. E., Mukherjee, S., Kelly, J., Markland, T., Boxer., S. G.
  CELL PRESS.2026: 341a
- **Who's really in charge? Dissecting directional electric fields in enzyme catalysis**
  Mukherjee, S., Fried, S. D. E., Mathews, I. I., Boxer, S. G.
  CELL PRESS.2026: 50a-51a
- **Interplay of electrostatics and conformational dynamics in dihydrofolate reductase catalysis**
  Fried, S. D. E., Mukherjee, S., Mathews, I. I., Boxer, S. G.
  CELL PRESS.2026: 51a
- **Magnetic-resonance control of spin-correlated radical pair dynamics in a transgenic animal**
  Bagheri, N., Burd, S. C., Condon, A. F., Ingaramo, M., Mondal, S., Dowlatshahi, D. P., Summers, J. A., Mukherjee, S., York, A. G., Wakatsuki, S., Boxer, S. G., Kasevich, M.
  CELL PRESS.2026: 22a

- **Application of Amber Suppression To Study the Role of Tyr M210 in Electron Transfer inRhodobacter sphaeroidesPhotosynthetic Reaction Centers.** *The journal of physical chemistry. B*
  Tran, K. N., Faries, K. M., Magdaong, N. C., Mathews, I. I., Weaver, J. B., Kirsh, J. M., Holten, D., Kirmaier, C., Boxer, S. G.
  2025
- **Detection of covalent drug binding in live cells using a quantum cascade laser and nitrile-labeled amino acids**
  Fried, S. D. E., Mukherjee, S., Bagheri, N., Hong, N. Y., Boxer, S. G.
  CELL PRESS.2025
- **Beyond the Vibrational Stark Effect: Unraveling the Large Redshifts of Alkyne C-H Bond in Solvation Environments.** *Journal of the American Chemical Society*
  Zheng, C., Mao, Y., Markland, T. E., Boxer, S. G.
  2025
- **Optical control of ultrafast structural dynamics in a fluorescent protein.** *Nature chemistry*
  Hutchison, C. D., Baxter, J. M., Fitzpatrick, A., Dorlhiac, G., Fadini, A., Perrett, S., Maghlaoui, K., Lefevre, S. B., Cordon-Preciado, V., Ferreira, J. L., Chukhutsina, V. U., Garratt, D., Barnard, et al
  2023
- **Structural Characterization of Fluorescent Proteins Using Tunable Femtosecond Stimulated Raman Spectroscopy.** *International journal of molecular sciences*
  Chen, C., Henderson, J. N., Ruchkin, D. A., Kirsh, J. M., Baranov, M. S., Bogdanov, A. M., Mills, J. H., Boxer, S. G., Fang, C.
  2023; 24 (15)
- **Serial Femtosecond Crystallography Reveals that Photoactivation in a Fluorescent Protein Proceeds via the Hula Twist Mechanism.** *Journal of the American Chemical Society*
  Fadini, A., Hutchison, C. D., Morozov, D., Chang, J., Maghlaoui, K., Perrett, S., Luo, F., Kho, J. C., Romei, M. G., Morgan, R. M., Orr, C. M., Cordon-Preciado, V., Fujiwara, et al
  2023
- **Carbon-deuterium bonds as reporters of electric fields in solvent and protein environments**
  Fried, S. D. E., Kirsh, J. M., Zheng, C., Mao, Y., Markland, T. E., Boxer, S. G.
  CELL PRESS.2023: 481A
- **A fluorogenic method to directly observe transfer and distribution of influenza viral contents to target vesicles**
  Bhattacharya, A., Boxer, S. G.
  CELL PRESS.2023: 277A
- **Examining compositional variability of giant unilamellar vesicles via secondary ion mass spectrometry**
  Grusky, D. S., Bhattacharya, A., Boxer, S. G.
  CELL PRESS.2023: 81A
- **Application of amber suppression to study the role of Tyr M210 in electron transfer in R. sphaeroides photosynthetic reaction centers**
  Tran, K., Faries, K., Magdaong, N., Kirmaier, C., Holten, D., Boxer, S. G.
  CELL PRESS.2023: 57A
- **A unifying electrostatic basis for designing enzymes faster than natural ones**
  Zheng, C., Ji, Z., Mathews, I. I., Boxer, S. G.
  CELL PRESS.2023: 483A
- **Protein protic and aprotic interactions systematically mapped via IR spectroscopy and polarizable molecular dynamics**
  Kirsh, J. M., Kozuch, J., Weaver, J. B., Boxer, S. G.
  CELL PRESS.2023: 309A
- **Tradeoffs of electrostatics and chemical positioning in the evolution of antibiotic resistance in TEM beta-lactamases**
  Boxer, S. G., Schneider, S. H., Kozuch, J. A.
  CELL PRESS.2022: 346A
- **Nitrile IR intensities directly measure electric fields in protic and non-protic environments**
  Weaver, J. B., Kozuch, J. A., Kirsh, J. M., Boxer, S. G.

CELL PRESS.2022: 414A

- **A two-directional vibrational probe reveals the distinct electric field orientation at the active site of liver alcohol dehydrogenase**
  Zheng, C., Mao, Y., Kozuch, J. A., Atsango, A. O., Ji, Z., Markland, T. E., Boxer, S. G.
  CELL PRESS.2022: 441A
- **Protein electric fields regulate covalent inhibition of beta-lactamases**
  Ji, Z., Boxer, S. G.
  CELL PRESS.2022: 441A
- **Tuning solvent electrostatic environment of amide carbonyls as prototypical peptide backbones**
  Fried, S. D. E., Zheng, C., Mao, Y., Markland, T. E., Boxer, S. G.
  CELL PRESS.2022: 186A
- **Self-assembly and phase transition properties of pure archaeal tetraether lipids**
  Bhattacharya, A., Falk, I. D., Burns, N. Z., Boxer, S. G.
  CELL PRESS.2022: 290A
- **Modulating the Influenza A Virus-Target Membrane Fusion Interface With Synthetic DNA-Lipid Receptors.** *Langmuir : the ACS journal of surfaces and colloids*
  Webster, E. R., Liu, K. N., Rawle, R. J., Boxer, S. G.
  2022
- **Halogenation-Dependent Effects of the Chlorosulfolipids of Ochromonas danica on Lipid Bilayers.** *ACS chemical biology*
  Moss Iii, F. R., Cabrera, G. E., McKenna, G. M., Salerno, G. J., Shuken, S. R., Landry, M. L., Weiss, T. M., Burns, N. Z., Boxer, S. G.
  2020
- **Structural and spectroscopic characterization of photoactive yellow protein and photoswitchable fluorescent protein constructs containing heavy atoms.** *Journal of photochemistry and photobiology. A, Chemistry*
  Romei, M. G., Lin, C., Boxer, S. G.
  2020; 401
- **Unified Model for Photophysical and Electro-Optical Properties of Green Fluorescent Proteins**
  Lin, C., Romei, M. G., Oltrogge, L. M., Mathews, I. I., Boxer, S. G.
  CELL PRESS.2020: 608A
- **Electrostatic Control of Photoisomerization Pathways in Proteins**
  Romei, M. G., Lin, C., Mathews, I. I., Boxer, S. G.
  CELL PRESS.2020: 609A
- **Cholesterol Alters Physical Properties of the Target Membrane to Facilitate Influenza Membrane Fusion at the Single-Particle Level**
  Liu, K. N., Boxer, S. G.
  CELL PRESS.2020: 554A
- **Deconvolution of Influenza a Viral Binding and Fusion with a Chemically-Defined Glycocalyx**
  Webster, E. R., Delaveris, C. S., Bertozzi, C. R., Boxer, S. G.
  CELL PRESS.2020: 553A
- **Target Membrane Cholesterol Modulates Single Influenza Virus Membrane Fusion Efficiency but Not Rate.** *Biophysical journal*
  Liu, K. N., Boxer, S. G.
  2020
- **Detecting and Controlling Dye Effects in Single-Virus Fusion Experiments.** *Biophysical journal*
  Rawle, R. J., Villamil Giraldo, A. M., Boxer, S. G., Kasson, P. M.
  2019
- **Electric fields and enzyme catalysis**
  Boxer, S.
  AMER CHEMICAL SOC.2019
- **Detecting and Controlling Dye and Illumination Effects in Single-Virus Fusion Experiments**

Rawle, R. J., Boxer, S. G., Kasson, P. M.
CELL PRESS.2019: 181A

- **Perturbation of Short Hydrogen Bonds in Photoactive Yellow Protein via Noncanonical Amino Acid Incorporation.** *The journal of physical chemistry. B*
  Thomson, B. n., Both, J. n., Wu, Y. n., Parrish, R. M., Martínez, T. J., Boxer, S. G.
  2019
- **Unified Model for Photophysical and Electro-Optical Properties of Green Fluorescent Proteins** *Journal of the American Chemical Society*
  Lin, C., Romei, M. G., Oltrogge, L. M., Mathews, I. I., Boxer, S. G.
  2019; 141 (38): 15250-15265
- **Photoactive Split Green Fluorescent Protein: Engineering a New Optogenetic and Imaging System**
  Romei, M. G., Longwell, C. K., Cochran, J. R., Boxer, S. G.
  CELL PRESS.2018: 177A–178A
- **Genetic Code Expansion in Rhodobacter sphaeroides to Incorporate Non-canonical Amino Acids into Photosynthetic Reaction Centers**
  Weaver, J. B., Boxer, S. G.
  CELL PRESS.2018: 177A
- **Ladderane Phospholipids Form Dense Membranes with Low Proton Permeability**
  Moss, F. R., Shuken, S. R., Mercer, J. A. M., Cohen, C. M., Burns, N. Z., Boxer, S. G.
  CELL PRESS.2018: 260A
- **Direct Observation of Polarization in Short Hydrogen Bonds due to Proton Delocalization**
  Lin, C., Boxer, S. G.
  CELL PRESS.2018: 521A
- **Cholesterol-Induced Membrane Organization Promotes Influenza Virus Binding**
  Goronzy, I., Rawle, R., Boxer, S., Kasson, P.
  CELL PRESS.2018: 379A
- **Kinetic Models of Zika Virus Membrane Fusion**
  Rawle, R., Webster, E., Boxer, S., Kasson, P.
  CELL PRESS.2018: 604A
- **The Physical Origins of Enzyme Evolution: Correlating the Active Site Electric Fields of Antibiotic Resistance along Evolutionary Trajectories in TEM beta-Lactamases**
  Schneider, S. H., Kozuch, J. A., Boxer, S. G.
  CELL PRESS.2018: 200A
- **Synthesis and Biophysical Characterization of the Chlorosulfolipids of Ochramonas danica**
  McKenna, G. M., Moss, F. R., Landry, M. L., Burns, N. Z., Boxer, S. G.
  CELL PRESS.2018: 16A
- **The Effect of pH on Single Virus Lipid Mixing Kinetics**
  Webster, E. R., Rawle, R., Kasson, P., Boxer, S.
  CELL PRESS.2018: 391A
- **Single Particle Content Transfer Assay for Surface-Tethered Virus Membrane Fusion**
  Liu, K. N., Rawle, R. J., Webster, E. R., Boxer, S. G.
  CELL PRESS.2018: 604A
- **Rational Protein Design via Structure-Energetics-Function Relationships in the Photoactive Yellow Protein (PYP) Model System**
  Both, J. H., Parrish, R. M., Martinez, T. J., Boxer, S. G.
  CELL PRESS.2018: 410A
- **Genetic Code Expansion in Rhodobacter sphaeroides to Incorporate Non-canonical Amino Acids into Photosynthetic Reaction Centers**
  Weaver, J. B., Boxer, S. G.
  CELL PRESS.2018: 177A

- **Electric fields and enzyme catalysis**
  Boxer, S.
  AMER CHEMICAL SOC.2017
- **Comment on "Transient Conformational Changes of Sensory Rhodopsin II Investigated by Vibrational Stark Effect Probes"** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Boxer, S. G.
  2017; 121 (30): 7395–96
- **Model system for separating viral membrane binding and fusion**
  Boxer, S., Rawle, R., Kasson, P., Webster, E.
  AMER CHEMICAL SOC.2017
- **Electric fields and enzyme catalysis**
  Boxer, S.
  AMER CHEMICAL SOC.2017
- **Membrane architectures, vesicle and viral fusion using DNA-lipid conjugates**
  Boxer, S.
  AMER CHEMICAL SOC.2017
- **Solvent-Independent Anharmonicity for Carbonyl Oscillators.** *journal of physical chemistry. B*
  Schneider, S. H., Kratochvil, H. T., Zanni, M. T., Boxer, S. G.
  2017
- **Mechanism and bottlenecks in strand photodissociation of split green fluorescent proteins (GFPs).** *Proceedings of the National Academy of Sciences of the United States of America*
  Lin, C., Both, J., Do, K., Boxer, S. G.
  2017
- **Nanometer-Scale Lipid Clusters in Model Membranes Revealed by Atomic Recombination in Nanosims**
  Moss, F. R., Boxer, S. G.
  CELL PRESS.2017: 175A
- **Influenza Binding Avidity Governed by Sterol-Dependent Ganglioside Dynamics**
  Goronzy, I., Rawle, R., Kasson, P., Boxer, S.
  CELL PRESS.2017: 75A
- **Single-Virus Observation of pH-Triggered Zika Fusion in the Absence of a Cellular Receptor**
  Rawle, R. J., Webster, E., Goronzy, I., Boxer, S., Kasson, P.
  CELL PRESS.2017: 80A
- **Electric Fields and Enzyme Catalysis** *ANNUAL REVIEW OF BIOCHEMISTRY, VOL 86*
  Fried, S. D., Boxer, S. G.
  edited by Kornberg, R. D.
  2017; 86: 387–415
- **Chemical Synthesis and Self-Assembly of a Ladderane Phospholipid** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Mercer, J. A., Cohen, C. M., Shuken, S. R., Wagner, A. M., Smith, M. W., Moss, F. R., Smith, M. D., Vahala, R., Gonzalez-Martinez, A., Boxer, S. G., Burns, N. Z.
  2016; 138 (49): 15845-15848
- **Short range interactions in model membranes measured by atom recombination and mass spectrometry**
  Boxer, S., Moss, F.
  AMER CHEMICAL SOC.2016
- **Nuclear and electronic delocalization in enzyme hydrogen bond networks**
  Wang, L., Fried, S., Boxer, S., Markland, T.
  AMER CHEMICAL SOC.2016

- **Vibrational stark effects, solvatochromism and electric fields at the active sites of enzymes**
  Boxer, S., Wu, Y., Schneider, S.
  AMER CHEMICAL SOC.2016
- **Vibrational Stark Effects for Diverse Carbonyl Probes Applied to the Re-Interpretation of IR and Raman Data in Terms of Electric Fields at Enzyme Active Sites**
  Schneider, S. H., Boxer, S. G.
  CELL PRESS.2016: 547A
- **Atomic Recombination in Nanosims as a Method to Measure Nanometer-Scale Intermolecular Distances in Lipid Bilayers**
  Moss, F. R., Boxer, S. G.
  CELL PRESS.2016: 17A
- **Control of Influenza Virus Binding by Target Membrane Composition**
  Goronzy, I., Rawle, R., Boxer, S., Kasson, P.
  CELL PRESS.2016: 248A–249A
- **Disentangling Viral Membrane Fusion from Receptor Binding by using Synthetic DNA-Lipid Conjugates to Tether Influenza Virus to Model Lipid Membranes**
  Rawle, R., Kasson, P., Boxer, S.
  CELL PRESS.2016: 251A
- **Combining Fluorescence Microscopy on Freestanding Lipid Bilayers with Electrical Measurements**
  VandenAkker, C. C., Boxer, S. G.
  CELL PRESS.2016: 370A–371A
- **Structural Insight into Split Green Fluorescent Protein**
  Deng, A., Boxer, S. G.
  CELL PRESS.2016: 380A
- **A Split GFP Barrel with an Internal Cavity that Binds the Chromophore**
  Lin, C., Boxer, S. G.
  CELL PRESS.2016: 540A
- **A Reversibly Photodissociable Split GFP**
  Both, J. H., Boxer, S. G.
  CELL PRESS.2016: 540A
- **Dissecting Proton Delocalization and the Electrostatic Contribution to Catalysis in an Enzyme's Hydrogen Bond Network with Unnatural Amino Acids**
  Wu, Y., Boxer, S. G.
  CELL PRESS.2016: 546A–547A
- **Dissecting Proton De localization in an Enzyme's Hydrogen Bond Network with Unnatural Amino Acids** *BIOCHEMISTRY*
  Wu, Y., Fried, S. D., Boxer, S. G.
  2015; 54 (48): 7110-7119
- **Response to Comments on "Extreme electric fields power catalysis in the active site of ketosteroid isomerase"** *SCIENCE*
  Fried, S. D., Boxer, S. G.
  2015; 349 (6251)
- **BIOPHYSICS. Response to Comments on "Extreme electric fields power catalysis in the active site of ketosteroid isomerase".** *Science*
  Fried, S. D., Boxer, S. G.
  2015; 349 (6251): 936-?
- **Applications of model membrane architectures**
  Boxer, S.
  AMER CHEMICAL SOC.2015
- **Short Hydrogen Bonds and Proton Delocalization in Green Fluorescent Protein (GFP)** *ACS CENTRAL SCIENCE*

Oltrogge, L. M., Boxer, S. G.
2015; 1 (3): 148-156

- **Dynamic reorganization and correlation among lipid raft components probed by imaging mass spectrometry**
  Boxer, S.
  AMER CHEMICAL SOC.2015
- **Correlated Motion and Complex Formation of Lipid-Raft Components Analyzed by High-Resolution Secondary Ion Mass Spectrometry**
  Lozano, M. M., Hovis, J. S., Moss, F. R., Kumar, K., Boxer, S. G.
  CELL PRESS.2015: 404A
- **Ground-State Proton Transfer Kinetics in Green Fluorescent Protein** *BIOCHEMISTRY*
  Oltrogge, L. M., Wang, Q., Boxer, S. G.
  2014; 53 (37): 5947-5957
- **GFP does ESPT - split GFPs do many things**
  Boxer, S.
  AMER CHEMICAL SOC.2014
- **Quantum nature of the hydrogen bond network in the ketosteroid isomerase active site**
  Wang, L., Fried, S. D., Boxer, S. G., Markland, T. E.
  AMER CHEMICAL SOC.2014
- **Vibrational Stark spectroscopy connects electrostatics to catalytic rates at enzyme active sites**
  Boxer, S.
  AMER CHEMICAL SOC.2014
- **Putative hydrogen bond to tyrosine M208 in photosynthetic reaction centers from Rhodobacter capsulatus significantly slows primary charge separation.** *journal of physical chemistry. B*
  Saggu, M., Carter, B., Zhou, X., Faries, K., Cegelski, L., Holten, D., Boxer, S. G., Kirmaier, C.
  2014; 118 (24): 6721-6732
- **Protein motion and protein function**
  Boxer, S. G.
  AMER CHEMICAL SOC.2014
- **Quantum Delocalization of Protons in the Ketosteroid Isomerase Active Site**
  Wang, L., Fried, S. D., Wu, Y., Boxer, S. G., Markland, T. E.
  CELL PRESS.2014: 589A
- **GFP Variants with Alternative Strands: Protease Sensor Design and their Thermodynamic Analysis**
  Do, K., Boxer, S. G.
  CELL PRESS.2014: 674A
- **Be Careful When Choosing Your Dye Label: Commercial, Water-Soluble Fluorophores Often Interact with Lipid Bilayers**
  Rawle, R. J., Hughes, L. D., Boxer, S. G.
  CELL PRESS.2014: 702A
- **Electric Field Asymmetry in the Photosynthetic Reaction Center?**
  Saggu, M., Boxer, S. G.
  CELL PRESS.2014: 588A
- **A Conserved Water-Mediated Hydrogen Bond Network Underlies Selectivity of the Kinase Inhibitor Bosutinib**
  Levinson, N. M., Boxer, S. G.
  CELL PRESS.2014: 647A
- **Protein-Chromophore Interactions in Green Fluorescent Protein (GFP) Studied by Split Protein Reconstitution**
  Oltrogge, L. M., Boxer, S. G.
  CELL PRESS.2014: 654A

- **GFP Variants with Alternative Strands: Protease Sensor Design and their Thermodynamic Analysis**
  Do, K., Boxer, S. G.
  CELL PRESS.2014: 674A
- **Be Careful When Choosing Your Dye Label: Commercial, Water-Soluble Fluorophores Often Interact with Lipid Bilayers**
  Rawle, R. J., Hughes, L. D., Boxer, S. G.
  CELL PRESS.2014: 702A
- **Choose your label wisely: water-soluble fluorophores often interact with lipid bilayers.** *PloS one*
  Hughes, L. D., Rawle, R. J., Boxer, S. G.
  2014; 9 (2)
- **Calculations of the Electric Fields in Liquid Solutions** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Fried, S. D., Wang, L., Boxer, S. G., Ren, P., Pande, V. S.
  2013; 117 (50): 16236-16248
- **DNA-Based Patterning of Tethered Membrane Patches** *LANGMUIR*
  Hughes, L. D., Boxer, S. G.
  2013; 29 (39): 12220-12227
- **Vibrational Stark spectroscopy connects electrostatics to catalytic rates at enzyme active sites**
  Boxer, S. G.
  AMER CHEMICAL SOC.2013
- **Measuring Electrostatic Fields in Both Hydrogen-Bonding and Non-Hydrogen-Bonding Environments Using Carbonyl Vibrational Probes** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Fried, S. D., Bagchi, S., Boxer, S. G.
  2013; 135 (30): 11181-11192
- **Thermodynamic framework for identifying free energy inventories of enzyme catalytic cycles** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Fried, S. D., Boxer, S. G.
  2013; 110 (30): 12271-12276
- **Quantitative dissection of hydrogen bond-mediated proton transfer in the ketosteroid isomerase active site.** *Proceedings of the National Academy of Sciences of the United States of America*
  Sigala, P. A., Fafarman, A. T., Schwans, J. P., Fried, S. D., Fenn, T. D., Caaveiro, J. M., Pybus, B., Ringe, D., Petsko, G. A., Boxer, S. G., Herschlag, D.
  2013; 110 (28): E2552-61
- **Quantitative dissection of hydrogen bond-mediated proton transfer in the ketosteroid isomerase active site** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Sigala, P. A., Fafarman, A. T., Schwans, J. P., Fried, S. D., Fenn, T. D., Caaveiro, J. M., Pybus, B., Ringe, D., Petsko, G. A., Boxer, S. G., Herschlag, D.
  2013; 110 (28): E2552-E2561
- **Lateral distribution of the T cell receptor and cholesterol detected by high-resolution secondary ion mass spectrometry**
  Wang, F., Lozano, M., Lillemeier, B., Boxer, S., Davis, M.
  AMER ASSOC IMMUNOLOGISTS.2013
- **Award Address (E. Bright Wilson Award in Spectroscopy sponsored by ACS Division of Physical Chemistry). Stark realities**
  Boxer, S.
  AMER CHEMICAL SOC.2013
- **Vibrational Stark Spectroscopy Directly Probes Electric Fields in Proteins** *57th Annual Meeting of the Biophysical-Society*
  Boxer, S., Bagchi, S., Fried, S. D., Levinson, N., Saggu, M., Xu, L.
  CELL PRESS.2013: 355A–355A
- **DNA-Based Patterning of Tethered Membrane Patches**
  Hughes, L. D., Boxer, S. G.

CELL PRESS.2013: 33A

- **Vibrational Stark Effects in the Active Site of Ketosteroid Isomerase Point to Large Electric Fields Driving Chemical Catalysis** *57th Annual Meeting of the Biophysical-Society*
  Fried, S. D., Bagchi, S., Boxer, S. G.
  CELL PRESS.2013: 205A–205A
- **Formation and analysis of topographical domains between lipid membranes tethered by DNA hybrids of different lengths** *FARADAY DISCUSSIONS*
  Chung, M., Koo, B. J., Boxer, S. G.
  2013; 161: 333-345
- **Experimental quantification of electrostatics in X-H···p hydrogen bonds.** *Journal of the American Chemical Society*
  Saggu, M., Levinson, N. M., Boxer, S. G.
  2012; 134 (46): 18986-18997
- **Experimental Quantification of Electrostatics in X-H center dot center dot center dot pi Hydrogen Bonds** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Saggu, M., Levinson, N. M., Boxer, S. G.
  2012; 134 (46): 18986-18997
- **Site-Specific Measurement of Water Dynamics in the Substrate Pocket of Ketosteroid Isomerase Using Time-Resolved Vibrational Spectroscopy** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Jha, S. K., Ji, M., Gaffney, K. J., Boxer, S. G.
  2012; 116 (37): 11414-11421
- **Solvent-Induced Infrared Frequency Shifts in Aromatic Nitriles Are Quantitatively Described by the Vibrational Stark Effect** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Levinson, N. M., Fried, S. D., Boxer, S. G.
  2012; 116 (35): 10470-10476
- **Photochemistry of a Bacterial Photosynthetic Reaction Center Missing the Initial Bacteriochlorophyll Electron Acceptor** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Carter, B., Boxer, S. G., Holten, D., Kirmaier, C.
  2012; 116 (33): 9971-9982
- **Electrostatics and dynamics in proteins using vibrational Stark spectroscopy**
  Boxer, S. G.
  AMER CHEMICAL SOC.2012
- **A Solvatochromic Model Calibrates Nitriles' Vibrational Frequencies to Electrostatic Fields** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Bagchi, S., Fried, S. D., Boxer, S. G.
  2012; 134 (25): 10373-10376
- **Structural and Spectroscopic Analysis of the Kinase Inhibitor Bosutinib and an Isomer of Bosutinib Binding to the Abl Tyrosine Kinase Domain** *PLOS ONE*
  Levinson, N. M., Boxer, S. G.
  2012; 7 (4)
- **Ribonuclease S Dynamics Measured Using a Nitrile Label with 2D IR Vibrational Echo Spectroscopy** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Bagchi, S., Boxer, S. G., Fayer, M. D.
  2012; 116 (13): 4034-4042
- **Programmed vesicle transformations and composition**
  Boxer, S. G.
  AMER CHEMICAL SOC.2012
- **Quantitative, directional measurement of electric field heterogeneity in the active site of ketosteroid isomerase** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Fafarman, A. T., Sigala, P. A., Schwans, J. P., Fenn, T. D., Herschlag, D., Boxer, S. G.

2012; 109 (6): E299-E308

- **Ground-State Proton Transfer in Green Fluorescent Protein Measured by NMR**
  Oltrogge, L. M., Boxer, S. G.
  CELL PRESS.2012: 576A
- **Incorporation of a Potassium Channel into a Suspended Lipid Bilayer Platform**
  Hughes, L. D., Boxer, S. G.
  CELL PRESS.2012: 95A–96A
- **Application of Split-GFP System in Biophysical Research and in Cell Biology**
  Do, K., Boxer, S. G.
  CELL PRESS.2012: 257A
- **Direct Measurements of Electric Fields in Weak Hydrogen Bonds**
  Saggu, M., Levinson, N. M., Boxer, S. G.
  CELL PRESS.2012: 269A
- **Direct Measurement of the Protein Response to an Electrostatic Perturbation that Mimics the Catalytic Cycle in Ketosteroid Isomerase**
  Jha, S., Ji, M., Gaffney, K. J., Boxer, S. G.
  CELL PRESS.2012: 273A
- **Kinome-Wide Spectroscopic Study of Drug Binding Site Electrostatics**
  Levinson, N., Boxer, S. G.
  CELL PRESS.2012: 410A–411A
- **Evaluation of the Energetics of the Concerted Acid-Base Mechanism in Enzymatic Catalysis: The Case of Ketosteroid Isomerase** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Fried, S. D., Boxer, S. G.
  2012; 116 (1): 690-697
- **Thermodynamics, Kinetics, and Photochemistry of beta-Strand Association and Dissociation in a Split-GFP System** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Do, K., Boxer, S. G.
  2011; 133 (45): 18078-18081
- **Direct Measurements of Electric Fields in Weak OH-pi Hydrogen Bonds** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Saggu, M., Levinson, N. M., Boxer, S. G.
  2011; 133 (43): 17414-17419
- **Vesicle Fusion Observed by Content Transfer across a Tethered Lipid Bilayer** *BIOPHYSICAL JOURNAL*
  Rawle, R. J., van Lengerich, B., Chung, M., Bendix, P. M., Boxer, S. G.
  2011; 101 (8): L37-L39
- **Electrostatic Fields near the Active Site of Human Aldose Reductase: 2. New Inhibitors and Complications Caused by Hydrogen Bonds** *BIOCHEMISTRY*
  Xu, L., Cohen, A. E., Boxer, S. G.
  2011; 50 (39): 8311-8322
- **Direct measurement of the protein response to an electrostatic perturbation that mimics the catalytic cycle in ketosteroid isomerase** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Jha, S. K., Ji, M., Gaffney, K. J., Boxer, S. G.
  2011; 108 (40): 16612-16617
- **Phosphate Vibrations Probe Local Electric Fields and Hydration in Biomolecules** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Levinson, N. M., Bolte, E. E., Miller, C. S., Corcelli, S. A., Boxer, S. G.
  2011; 133 (34): 13236-13239
- **Stability of DNA-Tethered Lipid Membranes with Mobile Tethers** *LANGMUIR*
  Chung, M., Boxer, S. G.
  2011; 27 (9): 5492-5497

- **Tethered membrane patches and GUVs as tools in membrane biophysics**
  Boxer, S. G.
  AMER CHEMICAL SOC.2011
- **Light-Activated Reassembly of Split Green Fluorescent Protein** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Kent, K. P., Boxer, S. G.
  2011; 133 (11): 4046-4052
- **Imaging of Lipid Bilayer Mixtures and Actual Cell Membrane Fragments by Nanosims**
  Lozano, M. M., Boxer, S. G.
  CELL PRESS.2011: 366
- **Nitrile Bonds as Infrared Probes of Electrostatics in Ribonuclease S** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Fafarman, A. T., Boxer, S. G.
  2010; 114 (42): 13536-13544
- **Decomposition of Vibrational Shifts of Nitriles into Electrostatic and Hydrogen-Bonding Effects** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Fafarman, A. T., Sigala, P. A., Herschlag, D., Boxer, S. G.
  2010; 132 (37): 12811-12813
- **Covalent Attachment of Lipid Vesicles to a Fluid-Supported Bilayer Allows Observation of DNA-Mediated Vesicle Interactions** *LANGMUIR*
  van Lengerich, B., Rawle, R. J., Boxer, S. G.
  2010; 26 (11): 8666-8672
- **Solvation Response along the Reaction Coordinate in the Active Site of Ketosteroid Isomerase** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Childs, W., Boxer, S. G.
  2010; 132 (18): 6474-6480
- **Proton Affinity of the Oxyanion Hole in the Active Site of Ketosteroid Isomerase** *BIOCHEMISTRY*
  Childs, W., Boxer, S. G.
  2010; 49 (12): 2725-2731
- **Covalent Tethering of Lipid Vesicles to a Supported Lipid Bilayer by a DNA-Templated Click Reaction**
  van Lengerich, B., Rawle, R. J., Boxer, S. G.
  CELL PRESS.2010: 673A–674A
- **The Phosphorus-Oxygen Bond As An Intrinsic Vibrational Probe of Electric Field in Biological Systems**
  Levinson, N., Boxer, S.
  CELL PRESS.2010: 45A
- **The Phase Behavior of Supported Lipid Bilayer Mixtures and Cell Membranes Imaged By Secondary Ion Mass Spectrometry**
  Lozano, M. M., Weber, P. K., Hutcheon, I. D., Boxer, S. G.
  CELL PRESS.2010: 75A
- **Novel Photosynthetic Reaction Center Chromophore Configuration**
  Carter, B., Boxer, S. G.
  CELL PRESS.2010: 173A
- **Fabrication of a Membrane Interferometer Containing Electrodes**
  Hughes, L. D., Ganesan, P. V., Boxer, S. G.
  CELL PRESS.2010: 271A
- **Synthetic Chromophore Maturation by Split Green Fluorescent Protein (GFP)**
  Oltrogge, L. M., Kent, K. P., Boxer, S. G.
  CELL PRESS.2010: 392A
- **Membrane Interactions Mediated by DNA Hybridization**
  Boxer, S.

CELL PRESS.2010: 618A

- **DNA-Mediated Fusion between Individual Tethered Vesicles**
  Rawle, R. J., van Lengerich, B., Boxer, S. G.
  CELL PRESS.2010: 673A
- **Synthetic Control of Green Fluorescent Protein** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Kent, K. P., Oltrogge, L. M., Boxer, S. G.
  2009; 131 (44): 15988-?
- **DNA-tethered membranes formed by giant vesicle rupture** *JOURNAL OF STRUCTURAL BIOLOGY*
  Chung, M., Lowe, R. D., Chan, Y. M., Ganesan, P. V., Boxer, S. G.
  2009; 168 (1): 190-199
- **A membrane interferometer** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Ganesan, P. V., Boxer, S. G.
  2009; 106 (14): 5627-5632
- **Trapping the P+BL- Initial Intermediate State of Charge Separation in Photosynthetic Reaction Centers from Rhodobacter capsulatus** *BIOCHEMISTRY*
  Carter, B., Boxer, S. G., Holten, D., Kirmaier, C.
  2009; 48 (12): 2571-2573
- **DNA-mediated fusion of lipid vesicles**
  van Lengerich, B., Chan, Y., Boxer, S. G.
  AMER CHEMICAL SOC.2009
- **Synthetic biology with DNA-lipid conjugates**
  Boxer, S. G.
  AMER CHEMICAL SOC.2009
- **Stark Realities** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Boxer, S. G.
  2009; 113 (10): 2972-2983
- **Effects of linker sequences on vesicle fusion mediated by lipid-anchored DNA oligonucleotides** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Chan, Y. M., van Lengerich, B., Boxer, S. G.
  2009; 106 (4): 979-984
- **Advances in Imaging Secondary Ion Mass Spectrometry for Biological Samples** *ANNUAL REVIEW OF BIOPHYSICS*
  Boxer, S. G., Kraft, M. L., Weber, P. K.
  2009; 38: 53-74
- **Charge Transfer in Photoacids Observed by Stark Spectroscopy** *JOURNAL OF PHYSICAL CHEMISTRY A*
  Silverman, L. N., Spry, D. B., Boxer, S. G., Fayer, M. D.
  2008; 112 (41): 10244-10249
- **COLL 114-Fabrication and characterization of a membrane interferometer**
  Boxer, S. G., Ganesan, P.
  AMER CHEMICAL SOC.2008
- **Deconstructing green fluorescent protein** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Kent, K. P., Childs, W., Boxer, S. G.
  2008; 130 (30): 9664-?
- **Lipid-anchored DNA mediates vesicle fusion as observed by lipid and content mixing** *International Workshop on Novel Model Systems for Bimolecular Lipid Membranes*
  Chan, Y. M., van Lengerich, B., Boxer, S. G.
  SPRINGER.2008: FA17–FA21

- **Temperature dependence of electron transfer to the M-side bacteriopheophytin in Rhodobacter capsulatus reaction Centers** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Chuang, J. I., Boxer, S. G., Holten, D., Kirmaier, C.
  2008; 112 (17): 5487-5499
- **Electrostatic fields near the active site of human aldose reductase: 1. New inhibitors and vibrational stark effect measurements** *BIOCHEMISTRY*
  Webb, L. J., Boxer, S. G.
  2008; 47 (6): 1588-1598
- **Stark spectroscopy of mixed-valence systems** *PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY A-MATHEMATICAL PHYSICAL AND ENGINEERING SCIENCES*
  Silverman, L. N., Kanchanawong, P., Treynor, T. P., Boxer, S. G.
  2008; 366 (1862): 33-45
- **Dynamic Stokes shift in green fluorescent protein variants** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Abbyad, P., Childs, W., Shi, X., Boxer, S. G.
  2007; 104 (51): 20189-20194
- **Anomalous negative fluorescence Anisotropy in yellow fluorescent protein (YFP 10C): Quantitative analysis of FRET in YFP dimers** *BIOCHEMISTRY*
  Shi, X., Basran, J., Seward, H. E., Childs, W., Bagshaw, C. R., Boxer, S. G.
  2007; 46 (50): 14403-14417
- **Model membrane systems and their applications** *CURRENT OPINION IN CHEMICAL BIOLOGY*
  Chan, Y. M., Boxer, S. G.
  2007; 11 (6): 581-587
- **Kinetics of DNA-mediated docking reactions between vesicles tethered to supported lipid bilayers** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Chan, Y. M., Lenz, P., Boxer, S. G.
  2007; 104 (48): 18913-18918
- **Ultrafast excited-state dynamics in the green fluorescent protein variant S65T/H148D. 1. Mutagenesis and structural studies** *BIOCHEMISTRY*
  Shu, X., Kallio, K., Shi, X., Abbyad, P., Kanchanawong, P., Childs, W., Boxer, S. G., Remington, S. J.
  2007; 46 (43): 12005-12013
- **Ultrafast excited-state dynamics in the green fluorescent protein variant S65T/H148D. 2. Unusual photophysical properties** *BIOCHEMISTRY*
  Shi, X., Abbyad, P., Shu, X., Kallio, K., Kanchanawong, P., Childs, W., Remington, S. J., Boxer, S. G.
  2007; 46 (43): 12014-12025
- **Vibrational stark effect probes for nucleic acids** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Silverman, L. N., Pitzer, M. E., Ankomah, P. O., Boxer, S. G., Fenlon, E. E.
  2007; 111 (40): 11611-11613
- **Do ligand binding and solvent exclusion alter the electrostatic character within the oxyanion hole of an enzymatic active site?** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Sigala, P. A., Fafarman, A. T., Bogard, P. E., Boxer, S. G., Herschlag, D.
  2007; 129 (40): 12104-?
- **PHYS 115-Excited state, proton transfer and solvation dynamics in green fluorescent protein (GFP)**
  Boxer, S. G.
  AMER CHEMICAL SOC.2007
- **Measurement of solvation responses at multiple sites in a globular protein** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Abbyad, P., Shi, X., Childs, W., McAnaney, T. B., Cohen, B. E., Boxer, S. G.
  2007; 111 (28): 8269-8276

- **Frictional drag and electrical manipulation of recombinant proteins in polymer-supported membranes** *LANGMUIR*
  Tanaka, M., Hermann, J., Haase, I., Fischer, M., Boxer, S. G.
  2007; 23 (10): 5638-5644
- **Vibrational stark effect probes: Calculation and measurement of electrostatic fields in human aldose reductase using a nitrile probe**
  Webb, L. J., Oklejas, V., Ensign, D. L., Pande, V. S., Boxer, S. G.
  AMER CHEMICAL SOC.2007
- **Reactions between vesicles observed one at a time**
  Boxer, S. G.
  AMER CHEMICAL SOC.2007
- **Anomalous negative fluorescence anisotropy in yellow fluorescent protein (YFP 10C): A novel case of Homo-FRIET** *51st Annual Meeting of the Biophysical-Society*
  Shi, X., Childs, W., Bagshaw, C. R., Boxer, S. G.
  CELL PRESS.2007: 327A–327A
- **Site-specific conversion of cysteine thiols into thiocyanate creates an IR probe for electric fields in proteins** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Fafarman, A. T., Webb, L. J., Chuang, J. I., Boxer, S. G.
  2006; 128 (41): 13356-13357
- **Phase separation of lipid membranes analyzed with high-resolution secondary ion mass spectrometry** *SCIENCE*
  Kraft, M. L., Weber, P. K., Longo, M. L., Hutcheon, I. D., Boxer, S. G.
  2006; 313 (5795): 1948-1951
- **Charge delocalization in the special-pair radical cation of mutant reaction centers of Rhodobacter sphaeroides from stark spectra and nonadiabatic spectral simulations** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Kanchanawong, P., Dahlbom, M. G., Treynor, T. P., Reimers, J. R., Hush, N. S., Boxer, S. G.
  2006; 110 (37): 18688-18702
- **Antibody evolution constrains conformational heterogeneity by tailoring protein dynamics** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Zimmermann, J., Oakman, E. L., Thorpe, I. F., Shi, X., Abbyad, P., Brooks, C. L., Boxer, S. G., Romesberg, F. E.
  2006; 103 (37): 13722-13727
- **PHYS 62-Membrane composition analysis by imaging mass spectrometry**
  Boxer, S. G., Kraft, M. L., Longo, M., Hutcheon, I. D., Weber, P. K.
  AMER CHEMICAL SOC.2006
- **PHYS 524-Intervalence charge transfer in hybrid organic-inorganic neutral radicals**
  Perlson, L. N., Ratera, I., Sporer, C., Veciana, J., Boxer, S. G.
  AMER CHEMICAL SOC.2006
- **Chemical imaging of phase-separated lipid membranes by secondary ion mass spectrometry**
  Kraft, M. L., Weber, P. K., Longo, M. L., Hutcheon, I. D., Boxer, S. G.
  AMER CHEMICAL SOC.2006: 42–42
- **PHYS 470-High yield of M-side electron transfer in mutants of Rhodobacter capsulatus reaction centers lacking the L-side bacteriopheophytin**
  Chuang, J. I., Kanchanawong, P., Holten, D., Boxer, S. G., Kirmaier, C.
  AMER CHEMICAL SOC.2006
- **PHYS 594-Electric field effects on steady-state emission spectra of mutant bacterial reaction centers lacking L-side bacteriopheophytin**
  Kanchanawong, P., Chuang, J. I., Boxer, S. G.
  AMER CHEMICAL SOC.2006
- **Tension-induced pore formation and leakage in adhering vesicles** *EUROPHYSICS LETTERS*
  Lenz, P., Johnson, J. M., Chan, Y. M., Boxer, S. G.
  2006; 75 (4): 659-665

- **Quantitative analysis of supported membrane composition using the NanoSIMS** *15th International Conference on Secondary Ion Mass Spectrometry (SIMS XV)*
  Kraft, M. L., Fishel, S. F., Marxer, C. G., Weber, P. K., Hutcheon, I. D., Boxer, S. G.
  ELSEVIER SCIENCE BV.2006: 6950–56
- **Electric fields at the active site of an enzyme: Direct comparison of experiment with theory** *SCIENCE*
  Suydam, I. T., Snow, C. D., Pande, V. S., Boxer, S. G.
  2006; 313 (5784): 200-204
- **Diffusive dynamics of vesicles tethered to a fluid supported bilayer by single-particle tracking** *LANGMUIR*
  Yoshina-Ishii, C., Chan, Y. M., Johnson, J. M., Kung, L. A., Lenz, P., Boxer, S. G.
  2006; 22 (13): 5682-5689
- **High yield of M-side electron transfer in mutants of Rhodobacter capsulatus reaction centers lacking the L-side bacteriopheophytin** *BIOCHEMISTRY*
  Chuang, J. I., Boxer, S. G., HOLTEN, D., Kirmaier, C.
  2006; 45 (12): 3845-3851
- **Controlling two-dimensional tethered vesicle motion using an electric field: Interplay of electrophoresis and electro-osmosis** *LANGMUIR*
  Yoshina-Ishii, C., Boxer, S. G.
  2006; 22 (5): 2384-2391
- **E-cadherin tethered to micropatterned supported lipid bilayers as a model for cell adhesion** *LANGMUIR*
  Perez, T. D., NELSON, W. J., Boxer, S. G., Kam, L.
  2005; 21 (25): 11963-11968
- **Variable incidence angle fluorescence interference contrast microscopy for z-imaging single objects** *BIOPHYSICAL JOURNAL*
  Ajo-Franklin, C. M., Ganesan, P. V., Boxer, S. G.
  2005; 89 (4): 2759-2769
- **Excited state dynamics in green fluorescent protein (GFP)** *230th National Meeting of the American-Chemical-Society*
  Boxer, S. G., Remington, S. J., Shi, X., Abbyad, P.
  AMER CHEMICAL SOC.2005: U2822–U2823
- **Enhancement of the fluorescence of the blue fluorescent proteins by high pressure or low temperature** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Mauring, K., Deich, J., Rosell, F. I., McAnaney, T. B., Moerner, W. E., Boxer, S. G.
  2005; 109 (26): 12976-12981
- **Green fluorescent protein variants as ratiometric dual emission pH sensors. 3. Temperature dependence of proton transfer** *BIOCHEMISTRY*
  McAnaney, T. B., Shi, X. H., Abbyad, P., Jung, H., Remington, S. J., Boxer, S. G.
  2005; 44 (24): 8701-8711
- **Probing the structure of supported membranes and tethered oligonucleotides by fluorescence interference contrast microscopy** *LANGMUIR*
  Ajo-Franklin, C. M., Yoshina-Ishii, C., Boxer, S. G.
  2005; 21 (11): 4976-4983
- **Protonation, photobleaching, and photoactivation of yellow fluorescent protein (YFP 10C): A unifying mechanism** *BIOCHEMISTRY*
  McAnaney, T. B., Zeng, W., Doe, C. F., Bhanji, N., Wakelin, S., Pearson, D. S., Abbyad, P., Shi, X. H., Boxer, S. G., Bagshaw, C. R.
  2005; 44 (14): 5510-5524
- **Supported membrane composition analysis by secondary ion mass spectrometry with high lateral resolution** *BIOPHYSICAL JOURNAL*
  Marxer, C. G., Kraft, M. L., Weber, P. K., Hutcheon, I. D., Boxer, S. G.
  2005; 88 (4): 2965-2975
- **Evolution of protein dynamics.** *229th National Meeting of the American-Chemical-Society (ACS)*
  Zimmermann, J., Oakman, E. L., Shi, X. H., Abbyad, P., Boxer, S. G., Thorpe, I. F., Brooks, C. L., Romesbrg, F.
  AMER CHEMICAL SOC.2005: U786–U786

- **Integral membrane protein arrays.**
  Boxer, S. G.
  AMER CHEMICAL SOC.2005: U638

- **General method for modification of liposomes for encoded assembly on supported bilayers** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Yoshina-Ishii, C., Miller, G. P., Kraft, M. L., Kool, E. T., Boxer, S. G.
  2005; 127 (5): 1356-1357

- **A GFP variant as a ratiometric-by-excitation pH indicator: Crystal structure analysis and evidence for low barrier hydrogen bond** *49th Annual Meeting of the Biophysical-Society*
  Shu, X. K., Shi, X. H., McAnaney, T. B., Abbyad, P., Boxer, S. G., Remington, S. J.
  CELL PRESS.2005: 171A–171A

- **The photodynamics of yellow fluorescent protein** *49th Annual Meeting of the Biophysical-Society*
  Abbyad, P., Shi, X. H., McAnaney, T., Zeng, W., Bagshaw, C. R., Boxer, S. G.
  CELL PRESS.2005: 388A–388A

- **Green fluorescent protein variants as ratiometric dual emission pH sensors: Temperature dependence of proton transfer** *49th Annual Meeting of the Biophysical-Society*
  Shi, X. H., McAnaney, T. B., Abbyad, P., Jung, H., Remington, S. J., Boxer, S. G.
  CELL PRESS.2005: 161A–161A

- **Vesicle adsorption and lipid bilayer formation on glass studied by atomic force microscopy** *LANGMUIR*
  Schonherr, H., Johnson, J. M., Lenz, P., Frank, C. W., Boxer, S. G.
  2004; 20 (26): 11600-11606

- **Patterned supported lipid bilayers and monolayers on poly(dimethylsiloxane)** *LANGMUIR*
  Lenz, P., Ajo-Franklin, C. M., Boxer, S. G.
  2004; 20 (25): 11092-11099

- **Probing excited-state electron transfer by resonance stark spectroscopy: 4 mutations near B-L in photosynthetic reaction centers perturb multiple factors that affect B-L(*)-> BL+HL-** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Treynor, T. P., Yoshina-Ishii, C., Boxer, S. G.
  2004; 108 (35): 13523-13535

- **Probing excited-state electron transfer by resonance stark spectroscopy: 3. Theoretical foundations and practical applications** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Treynor, T. P., Boxer, S. G.
  2004; 108 (35): 13513-13522

- **Bilayers in a supporting role: Tethered vesicles and composition analysis.**
  Boxer, S. G.
  AMER CHEMICAL SOC.2004: U862

- **A theory of intervalence band stark effects** *JOURNAL OF PHYSICAL CHEMISTRY A*
  Treynor, T. P., Boxer, S. G.
  2004; 108 (10): 1764-1778

- **Lipid membrane composition analyzed by secondary ion mass spectrometry**
  Marxer, C. G., Park, E. S., Weber, P. K., Hutcheon, I. D., Boxer, S. G.
  BIOPHYSICAL SOCIETY.2004: 383A

- **Interations between mobile tethered vesicles**
  Boxer, S.
  BIOPHYSICAL SOCIETY.2004: 33A

- **Excited-state energy transfer pathways in photosynthetic reaction centers: 5. Oxidized and triplet excited special pairs as energy acceptors** *CHEMICAL PHYSICS*
  King, B. A., McAnaney, T. B., de Winter, A., Boxer, S. G.

2003; 294 (3): 359-369

- **Vibrational Stark effects calibrate the sensitivity of vibrational probes for electric fields in proteins** *BIOCHEMISTRY*
  Suydam, I. T., Boxer, S. G.
  2003; 42 (41): 12050-12055
- **Intervalence Band stark effect of the special pair radical cation in bacterial photosynthetic reaction Centers** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Treynor, T. P., Andrews, S. S., Boxer, S. G.
  2003; 107 (40): 11230-11239
- **Energetics of primary charge separation in bacterial photosynthetic reaction center mutants: Triplet decay in large magnetic fields** *JOURNAL OF PHYSICAL CHEMISTRY A*
  de Winter, A., Boxer, S. G.
  2003; 107 (18): 3341-3350
- **Arrays of mobile tethered vesicles on supported lipid bilayers** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Yoshina-Ishii, C., Boxer, S. G.
  2003; 125 (13): 3696-3697
- **Spatially selective manipulation of supported lipid bilayers by laminar flow: Steps toward biomembrane microfluidics** *LANGMUIR*
  Kam, L., Boxer, S. G.
  2003; 19 (5): 1624-1631
- **Steady-state and time-resolved properties of dyes bound to the ketosteroid isomerase active site** *47th Annual Meeting of the Biophysical-Society*
  Kraut, D. A., McAnaney, T. B., Boxer, S., Herschlag, D.
  CELL PRESS.2003: 169A–169A
- **Spatially encoded and mobile arrays of tethered lipid vesicles** *47th Annual Meeting of the Biophysical-Society*
  Boxer, S. G., Ishii, C.
  CELL PRESS.2003: 379A–379A
- **Polarized absorption spectra of green fluorescent protein single crystals: Transition dipole moment directions** *BIOCHEMISTRY*
  Rosell, F. I., Boxer, S. G.
  2003; 42 (1): 177-183
- **Green fluorescent protein variants as ratiometric dual emission pH sensors. 1. Structural characterization and preliminary application** *BIOCHEMISTRY*
  Hanson, G. T., McAnaney, T. B., Park, E. S., Rendell, M. E., Yarbrough, D. K., Chu, S. Y., Xi, L. X., Boxer, S. G., Montrose, M. H., Remington, S. J.
  2002; 41 (52): 15477-15488
- **Green fluorescent protein variants as ratiometric dual emission pH sensors. 2. Excited-state dynamics** *BIOCHEMISTRY*
  McAnaney, T. B., Park, E. S., Hanson, G. T., Remington, S. J., Boxer, S. G.
  2002; 41 (52): 15489-15494
- **Early steps of supported bilayer formation probed by single vesicle fluorescence assays** *BIOPHYSICAL JOURNAL*
  Johnson, J. M., Ha, T., Chu, S., Boxer, S. G.
  2002; 83 (6): 3371-3379
- **Proximal ligand motions in H93G myoglobin** *EUROPEAN JOURNAL OF BIOCHEMISTRY*
  Franzen, S., Peterson, E. S., Brown, D., Friedman, J. M., Thomas, M. R., Boxer, S. G.
  2002; 269 (19): 4879-4886
- **Origins of the sensitivity of molecular vibrations to electric fields: Carbonyl and nitrosyl stretches in model compounds and proteins** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Park, E. S., Boxer, S. G.
  2002; 106 (22): 5800-5806
- **Probing protein electrostatics with a synthetic fluorescent amino acid** *SCIENCE*
  Cohen, B. E., McAnaney, T. B., Park, E. S., Jan, Y. N., Boxer, S. G., Jan, L. Y.

2002; 296 (5573): 1700-1703

- **Mobilizing and imaging membrane-associated proteins in supported lipid bilayers.**
  Boxer, S. G., Kam, L., Ajo, C., Ishii, C.
  AMER CHEMICAL SOC.2002: U458–U458
- **Micropattern formation in supported lipid membranes** *ACCOUNTS OF CHEMICAL RESEARCH*
  Groves, J. T., Boxer, S. G.
  2002; 35 (3): 149-157
- **Vibrational Stark effects of nitriles II. Physical origins of stark effects from experiment and perturbation models** *JOURNAL OF PHYSICAL CHEMISTRY A*
  Andrews, S. S., Boxer, S. G.
  2002; 106 (3): 469-477
- **Excited state dynamics of a pH-sensitive, dual emission green fluorescent protein variant**
  McAnaney, T. B., Park, E. S., Hanson, G. T., Rende, M. E., Remington, S. J., Boxer, S. G.
  BIOPHYSICAL SOCIETY.2002: 314A
- **Polarized absorption spectra of orthorhombic crystals of GFP: Mapping the transition moments of the chromophore**
  Boxer, S. G., Rosell, F. I.
  BIOPHYSICAL SOCIETY.2002: 306A–307A
- **Site-specific dynamic measurements of electrostatics in proteins**
  Park, E. S., McAnaney, T. B., Romanova, Z. S., Cohen, B. E., Jan, Y. N., Jan, L. Y., Boxer, S. G.
  BIOPHYSICAL SOCIETY.2002: 314A–315A
- **Enhancement of the blue fluorescent protein's fluorescence by high pressure or low temperature**
  Deich, J. A., Mauring, K., Rosell, F. I., McAnaney, T. B., Moerner, W. E., Boxer, S. G.
  BIOPHYSICAL SOCIETY.2002: 427A
- **Hybrid substrates for fluorescence microscopy of biological interfaces**
  Ajo-Franklin, C. M., Kam, L., Boxer, S. G.
  BIOPHYSICAL SOCIETY.2002: 500A
- **Site-specific dynamic measurements of electrostatics in proteins**
  Park, E. S., McAnaney, T. B., Romanova, Z. S., Cohen, B. E., Jan, Y. N., Jan, L. Y., Boxer, S. G.
  BIOPHYSICAL SOCIETY.2002: 314A–315A
- **Enhancement of the blue fluorescent protein's fluorescence by high pressure or low temperature**
  Deich, J. A., Mauring, K., Rosell, F. I., McAnaney, T. B., Moerner, W. E., Boxer, S. G.
  BIOPHYSICAL SOCIETY.2002: 427A
- **Hybrid substrates for fluorescence microscopy of biological interfaces**
  Ajo-Franklin, C. M., Kam, L., Boxer, S. G.
  BIOPHYSICAL SOCIETY.2002: 500A
- **FTIR and resonance Raman studies of nitric oxide binding to H93G cavity mutants of myoglobin** *BIOCHEMISTRY*
  Thomas, M. R., Brown, D., Franzen, S., Boxer, S. G.
  2001; 40 (49): 15047-15056
- **Electrostatic and conformational effects on the electronic structures of distortional isomers of a mixed-valence binuclear Cu complex** *INORGANIC CHEMISTRY*
  Franzen, S., Miskowski, V. M., Shreve, A. P., Wallace-Williams, S. E., Woodruff, W. H., Ondrias, M. R., Barr, M. E., Moore, L., Boxer, S. G.
  2001; 40 (25): 6375-6382
- **High refractive index substrates for fluorescence microscopy of biological interfaces with high z contrast** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Ajo-Franklin, C. M., Kam, L., Boxer, S. G.
  2001; 98 (24): 13643-13648

- **Electrophoresis of DNA adsorbed to a cationic supported bilayer** *LANGMUIR*
  OLSON, D. J., Johnson, J. M., Patel, P. D., Shaqfeh, E. S., Boxer, S. G., Fuller, G. G.
  2001; 17 (23): 7396-7401
- **Studying cadherin-cadherin dynamics using video microscopy of MDCK cells on cadherin-containing supported lipid bilayer**
  Perez, T. D., Kam, L., Boxer, S. G., Nelson, W. J.
  AMER SOC CELL BIOLOGY.2001: 350A
- **Spatially localized generation of nucleotide sequence-specific DNA damage** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Oh, D. H., King, B. A., Boxer, S. G., Hanawalt, P. C.
  2001; 98 (20): 11271-11276
- **Analysis of noise for rapid-scan and step-scan methods of FT-IR difference spectroscopy** *APPLIED SPECTROSCOPY*
  Andrews, S., Boxer, S. G.
  2001; 55 (9): 1161-1165
- **F-19 NMR of trifluoroacectyl-labeled cysteine mutants of myoglobin: Structural probes of nitric oxide bound to the H93G cavity mutant** *BIOCHEMISTRY*
  Thomas, M. R., Boxer, S. G.
  2001; 40 (29): 8588-8596
- **Cell adhesion to protein-micropatterned-supported lipid bilayer membranes** *JOURNAL OF BIOMEDICAL MATERIALS RESEARCH*
  Kam, L., Boxer, S. G.
  2001; 55 (4): 487-495
- **Photophysics of DsRed, a red fluorescent protein, from the ensemble to the single-molecule level** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Lounis, B., Deich, J., Rosell, F. I., Boxer, S. G., Moerner, W. E.
  2001; 105 (21): 5048-5054
- **Patterning and composition arrays of supported lipid bilayers by microcontact printing** *LANGMUIR*
  Hovis, J. S., Boxer, S. G.
  2001; 17 (11): 3400-3405
- **A photolysis-triggered heme ligand switch in H93G myoglobin** *BIOCHEMISTRY*
  Franzen, S., Bailey, J., Dyer, R. B., Woodruff, W. H., Hu, R. B., Thomas, M. R., Boxer, S. G.
  2001; 40 (17): 5299-5305
- **Mobility of DNA on cationic supported lipid bilayers.**
  Marton, A., Stancik, E. J., OLSON, D. J., Johnson, J. M., Boxer, S. G., Fuller, G. G.
  AMER CHEMICAL SOC.2001: U200–U200
- **Polymer-supported lipid bilayers on benzophenone-modified substrates** *BIOMACROMOLECULES*
  Shen, W. W., Boxer, S. G., Knoll, W., Frank, C. W.
  2001; 2 (1): 70-79
- **Excited state energy transfer pathways in photosynthetic reaction centers. 4. Asymmetric energy transfer in the heterodimer mutant** *JOURNAL OF PHYSICAL CHEMISTRY B*
  King, B. A., de Winter, A., McAnaney, T. B., Boxer, S. G.
  2001; 105 (9): 1856-1862
- **A high refractive index substrate to study membrane interfaces with high z-resolution**
  Boxer, S. G., Ajo, C. M., Kam, L.
  BIOPHYSICAL SOCIETY.2001: 504A
- **Initial steps of bilayer formation investigated using single vesicle fluorescence.**
  Johnson, J. M., Ha, T. J., Chu, S., Boxer, S. G.
  BIOPHYSICAL SOCIETY.2001: 417A
- **Electric field induced phase separation in lipid raft mixtures**

Hovis, J. S., Boxer, S. G.
BIOPHYSICAL SOCIETY.2001: 502A

- **Vibrational stark effects of nitriles I. Methods and experimental results** *JOURNAL OF PHYSICAL CHEMISTRY A*
  Andrews, S. S., Boxer, S. G.
  2000; 104 (51): 11853-11863
- **Formation of supported lipid bilayer composition arrays by controlled mixing and surface capture** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Kam, L., Boxer, S. G.
  2000; 122 (51): 12901-12902
- **The H93G myoglobin cavity mutant as a versatile template for modeling heme proteins: Ferrous, ferric, and ferryl mixed-ligand complexes with imidazole in the cavity** *INORGANIC CHEMISTRY*
  Pond, A. E., Roach, M. P., Thomas, M. R., Boxer, S. G., Dawson, J. H.
  2000; 39 (26): 6061-6066
- **Vibrational Stark spectroscopy of NO bound to heme: Effects of protein electrostatic fields on the NO stretch frequency** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Park, E. S., Thomas, M. R., Boxer, S. G.
  2000; 122 (49): 12297-12303
- **Molecular transport and organization in supported lipid membranes** *CURRENT OPINION IN CHEMICAL BIOLOGY*
  Boxer, S. G.
  2000; 4 (6): 704-709
- **Lateral reorganization of fluid lipid membranes in response to the electric field produced by a buried charge** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Groves, J. T., Boxer, S. G., McConnell, H. M.
  2000; 104 (47): 11409-11415
- **Resonance Raman studies of heme axial ligation in H93G myoglobin** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Franzen, S., Boxer, S. G., Dyer, R. B., Woodruff, W. H.
  2000; 104 (44): 10359-10367
- **Excited state energy transfer pathways in photosynthetic reaction centers. 3. Ultrafast emission from the monomeric bacteriochlorophylls** *JOURNAL OF PHYSICAL CHEMISTRY B*
  King, B. A., McAnaney, T. B., deWinter, A., Boxer, S. G.
  2000; 104 (37): 8895-8902
- **A liquid nitrogen immersion cryostat for optical measurements** *REVIEW OF SCIENTIFIC INSTRUMENTS*
  Andrews, S. S., Boxer, S. G.
  2000; 71 (9): 3567-3569
- **Recent developments in patterning, manipulating, and interrogating supported bilayer membranes.**
  Boxer, S. G., Kung, L., Hovis, J., Ajo, C., Johnson, J., Olson, D., Fuller, G. G.
  AMER CHEMICAL SOC.2000: U257–U257
- **Printing via photolithography on micropartitioned fluid lipid membranes** *ADVANCED MATERIALS*
  Kung, L. A., Groves, J. T., Ulman, N., Boxer, S. G.
  2000; 12 (10): 731-?
- **Vibrational Stark spectroscopy in proteins: A probe and calibration for electrostatic fields.**
  Park, E. S., Andrews, S. S., Hu, R. B., Boxer, S. G.
  AMER CHEMICAL SOC.2000: U330–U331
- **Dynamics of DNA adsorbed to fluid interfaces.**
  OLSON, D. J., Johnson, J. M., Fuller, G. G., Boxer, S. G.
  AMER CHEMICAL SOC.2000: U572–U572
- **Polymer-supported lipid bilayers on benzophenone-modified substrates.**

Shen, W. W., Boxer, S. G., Knoll, W., Frank, C. W.
AMER CHEMICAL SOC.2000: U458–U458

- **Electric field effects in multicomponent fluid lipid membranes** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Groves, J. T., Boxer, S. G., McConnell, H. M.
  2000; 104 (1): 119-124
- **Vibrational stark spectroscopy in proteins: A probe and calibration for electrostatic fields**
  Park, E. S., Andrews, S. S., Hu, R. B., Boxer, S. G.
  CELL PRESS.2000: 284A–284A
- **F-19 NMR of trifluoroacetyl-labeled cysteine mutants of sperm whale myoglobin.**
  Thomas, M. R., Boxer, S. G.
  BIOPHYSICAL SOCIETY.2000: 281A
- **Patterning barriers to lateral diffusion in supported lipid bilayer membranes by blotting and stamping**
  Hovis, J. S., Boxer, S. G.
  BIOPHYSICAL SOCIETY.2000: 329A
- **Increasing the energy gap between the B-L(center dot) and BL+HL- states of mutant Rb. sphaeroides reaction centers decreases the electronic coupling.**
  Treynor, T. P., Zhou, H., King, B. A., De Winter, R., McAnaney, T. B., Boxer, S. G.
  BIOPHYSICAL SOCIETY.2000: 339A
- **The role of the distal and proximal protein environments in controlling the ferric spin state and in stabilizing thiolate ligation in heme systems: Thiolate adducts of the myoglobin H93G cavity mutant** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Roach, M. P., Pond, A. E., Thomas, M. R., Boxer, S. G., Dawson, J. H.
  1999; 121 (51): 12088-12093
- **The mechanism of triplet energy transfer from the special pair to the carotenoid in bacterial photosynthetic reaction centers** *JOURNAL OF PHYSICAL CHEMISTRY B*
  deWinter, A., Boxer, S. G.
  1999; 103 (41): 8786-8789
- **Excited-state electronic asymmetry of the special pair in photosynthetic reaction center mutants: Absorption and stark spectroscopy** *BIOCHEMISTRY*
  Moore, L. J., Zhou, H. L., Boxer, S. G.
  1999; 38 (37): 11949-11960
- **Hydrogen bonding modulates binding of exogenous ligands in a myoglobin proximal cavity mutant** *BIOCHEMISTRY*
  Decatur, S. M., Belcher, K. L., Rickert, P. K., Franzen, S., Boxer, S. G.
  1999; 38 (34): 11086-11092
- **Brownian ratchets: Molecular separations in lipid bilayers supported on patterned arrays** *SCIENCE*
  van Oudenaarden, A., Boxer, S. G.
  1999; 285 (5430): 1046-1048
- **Assignment of the heme axial ligand(s) for the ferric myoglobin (H93G) and heme oxygenase (H25A) cavity mutants as oxygen donors using magnetic circular dichroism** *BIOCHEMISTRY*
  Pond, A. E., Roach, M. P., Sono, M., Rux, A. H., Franzen, S., Hu, R., Thomas, M. R., Wilks, A., Dou, Y., Ikeda-Saito, M., de Montelano, P. R., Woodruff, W. H., Boxer, et al
  1999; 38 (23): 7601-7608
- **Writing and erasing barriers to lateral mobility into fluid phospholipid bilayers** *LANGMUIR*
  Cremer, P. S., Groves, J. T., Kung, L. A., Boxer, S. G.
  1999; 15 (11): 3893-3896
- **Extending the use of H93G(Im) myoglobin for the preparation of mixed ligand ferrous, ferric and ferryl heme adducts and their characterization with MCD spectroscopy.**
  Dawson, J. H., Pond, A. E., Roach, M. P., Thomas, M. R., Boxer, S. G.
  ELSEVIER SCIENCE INC.1999: 110

- **Studies of the electronic structure of metallocene-based second-order nonlinear optical dyes** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Barlow, S., Bunting, H. E., Ringham, C., Green, J. C., Bublitz, G. U., Boxer, S. G., PERRY, J. W., Marder, S. R.
  1999; 121 (15): 3715-3723
- **Formation and spreading of lipid bilayers on planar glass supports** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Cremer, P. S., Boxer, S. G.
  1999; 103 (13): 2554-2559
- **CO recombination kinetics of sperm whale myoglobin mutants H93G[L] and H64V/H93G[L] as a function of proximal ligand L**
  Hu, R. B., Boxer, S. G.
  CELL PRESS.1999: A102–A102
- **Geometrical Brownian ratchets: A supported lipid bilayer on a microfabricated array of diffusion barriers**
  van Oudenaarden, A., Groves, J. T., Boxer, S. G.
  BIOPHYSICAL SOCIETY.1999: A11
- **Dynamics of nitric oxide and proximal ligand interaction in the myoglobin cavity mutant H93G.**
  Thomas, M. R., Boxer, S. G.
  BIOPHYSICAL SOCIETY.1999: A420
- **Electric field effects in multicomponent fluid lipid membranes**
  Groves, J. T., Boxer, S. G., McConnell, H. M.
  BIOPHYSICAL SOCIETY.1999: A432
- **Probing excited-state electron transfer by resonance Stark spectroscopy. 2. Theory and application** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Zhou, H. L., Boxer, S. G.
  1998; 102 (45): 9148-9160
- **Probing excited-state electron transfer by resonance Stark spectroscopy. 1. Experimental results for photosynthetic reaction centers** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Zhou, H. L., Boxer, S. G.
  1998; 102 (45): 9139-9147
- **Electronic structure of the chromophore in green fluorescent protein (GFP)** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Bublitz, G., King, B. A., Boxer, S. G.
  1998; 120 (36): 9370-9371
- **Effective charge transfer distances in cyanide-bridged mixed-valence transform metal complexes** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Bublitz, G. U., Laidlaw, W. M., Denning, R. G., Boxer, S. G.
  1998; 120 (24): 6068-6075
- **Substrate-membrane interactions: Mechanisms for imposing patterns on a fluid bilayer membrane** *LANGMUIR*
  Groves, J. T., Ulman, N., Cremer, P. S., Boxer, S. G.
  1998; 14 (12): 3347-3350
- **Effective polarity of frozen solvent glasses in the vicinity of dipolar solutes** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Bublitz, G. U., Boxer, S. G.
  1998; 120 (16): 3988-3992
- **Inter-chromophore interactions in pigment-modified and dimer-less bacterial photosynthetic reaction centers** *Workshop on Reaction Centers of Photosynthetic Purple Bacteria - Structure, Spectroscopy, Dynamics*
  Moore, L. J., Boxer, S. G.
  SPRINGER.1998: 173–80
- **Electric field-induced critical demixing in lipid bilayer membranes** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Groves, J. T., Boxer, S. G., McConnell, H. M.

1998; 95 (3): 935-938

- **Interaction of fluid phospholipid bilayers with planar supports**
  Cremer, P. S., Groves, J. T., Ulman, N., Boxer, S. G.
  BIOPHYSICAL SOCIETY.1998: A311
- **Dynamics of myoglobin-CO with the proximal histidine removed: Vibrational echo experiments** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Rector, K. D., Engholm, J. R., Hill, J. R., Myers, D. J., Hu, R., Boxer, S. G., Dlott, D. D., Fayer, M. D.
  1998; 102 (2): 331-333
- **Electric field-induced reorganization of two-component supported bilayer membranes** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Groves, J. T., Boxer, S. G., MCCONNEL, H. M.
  1997; 94 (25): 13390-13395
- **Characterization of the light-harvesting antennas of photosynthetic purple bacteria by stark spectroscopy .1. LH1 antenna complex and the B820 subunit from Rhodospirillum rubrum** *JOURNAL OF PHYSICAL CHEMISTRY B*
  BEEKMAN, L. M., Steffen, M., VANSTOKKUM, I. H., Olsen, J. D., Hunter, C. N., Boxer, S. G., VANGRONDELLE, R.
  1997; 101 (37): 7284-7292
- **Crystal structure and photodynamic behavior of the blue emission variant Y66H/Y145F of green fluorescent protein** *BIOCHEMISTRY*
  Wachter, R. M., King, B. A., Heim, R., Kallio, K., Tsien, R. Y., Boxer, S. G., Remington, S. J.
  1997; 36 (32): 9759-9765
- **Thiolate adducts of cavity mutant myoglobin H93G as models for cytochrome P450**
  Roach, M. P., Franzen, S., Pang, P. S., Boxer, S. G., Woodruff, W. H., Dawson, J. H.
  FEDERATION AMER SOC EXP BIOL.1997: A820
- **Charge resonance effects on electronic absorption line shapes: Application to the heterodimer absorption of bacterial photosynthetic reaction centers** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Zhou, H. L., Boxer, S. G.
  1997; 101 (29): 5759-5766
- **Temperature dependence of the Q(y) resonance Raman spectra of bacteriochlorophylls, the primary electron donor, and bacteriopheophytins in the bacterial photosynthetic reaction center** *BIOCHEMISTRY*
  Cherepy, N. J., Shreve, A. P., Moore, L. J., Boxer, S. G., Mathies, R. A.
  1997; 36 (28): 8559-8566
- **Large molecular third-order optical nonlinearities in polarized carotenoids** *SCIENCE*
  Marder, S. R., Torruellas, W. E., BLANCHARDDESCE, M., Ricci, V., Stegeman, G. I., GILMOUR, S., Bredas, J. L., Li, J., Bublitz, G. U., Boxer, S. G.
  1997; 276 (5316): 1233-1236
- **Excited state energy transfer pathways in photosynthetic reaction centers .2. Heterodimer special pair** *JOURNAL OF PHYSICAL CHEMISTRY B*
  King, B. A., Stanley, R. J., Boxer, S. G.
  1997; 101 (18): 3644-3648
- **Electronic and nuclear dynamics of the accessory bacteriochlorophylls in bacterial photosynthetic reaction centers from resonance Raman intensities** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Cherepy, N. J., Shreve, A. P., Moore, L. J., Boxer, S. G., Mathies, R. A.
  1997; 101 (16): 3250-3260
- **On the origin of heme absorption band shifts and associated protein structural relaxation in myoglobin following flash photolysis** *JOURNAL OF BIOLOGICAL CHEMISTRY*
  Franzen, S., Boxer, S. G.
  1997; 272 (15): 9655-9660
- **Stark spectroscopy of donor/acceptor substituted polyenes** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Bublitz, G. U., Ortiz, R., Marder, S. R., Boxer, S. G.
  1997; 119 (14): 3365-3376

- **Stark spectroscopy of donor-acceptor polyenes: Correlation with nonlinear optical measurements** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Bublitz, G. U., Ortiz, R., Runser, C., Fort, A., Barzoukas, M., Marder, S. R., Boxer, S. G.
  1997; 119 (9): 2311-2312
- **Micropatterning fluid lipid bilayers on solid supports** *SCIENCE*
  Groves, J. T., Ulman, N., Boxer, S. G.
  1997; 275 (5300): 651-653
- **Stark spectroscopy: Applications in chemistry, biology, and materials science** *ANNUAL REVIEW OF PHYSICAL CHEMISTRY*
  Bublitz, G. U., Boxer, S. G.
  1997; 48: 213-242
- **Two-photon excitation of 4'-hydroxymethyl-4,5',8-trimethylpsoralen** *PHOTOCHEMISTRY AND PHOTOBIOLOGY*
  Oh, D. H., Stanley, R. J., Lin, M., Hoeffler, W. K., Boxer, S. G., Berns, M. W., BAUER, E. A.
  1997; 65 (1): 91-95
- **Architecture and function of membrane proteins in planar supported bilayers: A study with photosynthetic reaction centers** *BIOCHEMISTRY*
  Salafsky, J., Groves, J. T., Boxer, S. G.
  1996; 35 (47): 14773-14781
- **Electrical manipulation of glycan phosphatidyl inositol tethered proteins in planar supported bilayers** *BIOPHYSICAL JOURNAL*
  Groves, J. T., Wulfing, C., Boxer, S. G.
  1996; 71 (5): 2716-2723
- **Structural biology - Another green revolution** *NATURE*
  Boxer, S. G.
  1996; 383 (6600): 484-485
- **Rapid isolation of bacterial photosynthetic reaction centers with an engineered poly-histidine tag** *BIOCHIMICA ET BIOPHYSICA ACTA-BIOENERGETICS*
  GOLDSMITH, J. O., Boxer, S. G.
  1996; 1276 (3): 171-175
- **Ultra-fast excited state dynamics in green fluorescent protein: Multiple states and proton transfer** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Chattoraj, M., King, B. A., Bublitz, G. U., Boxer, S. G.
  1996; 93 (16): 8362-8367
- **Vibrational dynamics of carbon monoxide at the active sites of mutant heme proteins** *JOURNAL OF PHYSICAL CHEMISTRY*
  Hill, J. R., Dlott, D. D., Rella, C. W., Peterson, K. A., Decatur, S. M., Boxer, S. G., Fayer, M. D.
  1996; 100 (29): 12100-12107
- **Excited state energy transfer pathways in photosynthetic reaction centers .1. Structural symmetry effects** *JOURNAL OF PHYSICAL CHEMISTRY*
  Stanley, R. J., King, B., Boxer, S. G.
  1996; 100 (29): 12052-12059
- **Trans effects in nitric oxide binding to myoglobin cavity mutant H93G** *BIOCHEMISTRY*
  Decatur, S. M., Franzen, S., DEPILLIS, G. D., Dyer, R. B., Woodruff, W. H., Boxer, S. G.
  1996; 35 (15): 4939-4944
- **Modulation of protein function by exogenous ligands in protein cavities: CO binding to a myoglobin cavity mutant containing unnatural proximal ligands** *BIOCHEMISTRY*
  Decatur, S. M., DEPILLIS, G. D., Boxer, S. G.
  1996; 35 (13): 3925-3932
- **Mg coordination by amino acid side chains is not required for assembly and function of the special pair in bacterial photosynthetic reaction centers** *BIOCHEMISTRY*
  GOLDSMITH, J. O., King, B., Boxer, S. G.

1996; 35 (7): 2421-2428

- **Dipolar character of ligand-centered transitions in transition metal tris-bipyridyl complexes** *INORGANICA CHIMICA ACTA*
  Hug, S. J., Boxer, S. G.
  1996; 242 (1-2): 323-327
- **Electric field-induced concentration gradients in planar supported bilayers** *BIOPHYSICAL JOURNAL*
  Groves, J. T., Boxer, S. G.
  1995; 69 (5): 1972-1975
- **EFFECTS OF APPLIED ELECTRIC-FIELDS ON THE QUANTUM YIELDS FOR THE INITIAL ELECTRON-TRANSFER STEPS IN BACTERIAL PHOTOSYNTHESIS .2. DYNAMIC STARK-EFFECT** *CHEMICAL PHYSICS*
  Lao, K. Q., Franzen, S., Steffen, M., Lambright, D., Stanley, R., Boxer, S. G.
  1995; 197 (3): 259-275
- **A TEST OF THE ROLE OF ELECTROSTATIC INTERACTIONS IN DETERMINING THE CO STRETCH FREQUENCY IN CARBONMONOXYMYOGLOBIN** *BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS*
  Decatur, S. M., Boxer, S. G.
  1995; 212 (1): 159-164
- **STARK-EFFECT SPECTROSCOPY OF TRYPTOPHAN** *BIOPHYSICAL JOURNAL*
  Pierce, D. W., Boxer, S. G.
  1995; 68 (4): 1583-1591
- **H-1-NMR CHARACTERIZATION OF MYOGLOBINS WHERE EXOGENOUS LIGANDS REPLACE THE PROXIMAL HISTIDINE** *BIOCHEMISTRY*
  Decatur, S. M., Boxer, S. G.
  1995; 34 (7): 2122-2129
- **FUNCTIONAL-ASPECTS OF ULTRA-RAPID HEME DOMING IN HEMOGLOBIN, MYOGLOBIN, AND THE MYOGLOBIN MUTANT H93G** *JOURNAL OF BIOLOGICAL CHEMISTRY*
  Franzen, S., Bohn, B., Poyart, C., DEPILLIS, G., Boxer, S. G., Martin, J. L.
  1995; 270 (4): 1718-1720
- **SPECTROSCOPIC STUDY OF SER92 MUTANTS OF HUMAN MYOGLOBIN - HYDROGEN-BONDING EFFECT OF SER92 TO PROXIMAL HIS93 ON STRUCTURE AND PROPERTY OF MYOGLOBIN** *BIOCHEMISTRY*
  Shiro, Y., Iizuka, T., Marubayashi, K., Ogura, T., Kitagawa, T., Balasubramanian, S., Boxer, S. G.
  1994; 33 (50): 14986-14992
- **CASTING A COLD EYE OVER MYOGLOBIN** *NATURE STRUCTURAL BIOLOGY*
  Boxer, S. G., AUFINRUD, P. A.
  1994; 1 (11): 749-751
- **FUNCTIONAL CAVITIES IN PROTEINS - A GENERAL-METHOD FOR PROXIMAL LIGAND SUBSTITUTION IN MYOGLOBIN** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  DEPILLIS, G. D., DECATUR, S. M., BARRICK, D., BOXER, S. G.
  1994; 116 (15): 6981–82
- **DETERMINATION OF THE CARBON-MONOXIDE BINDING CONSTANTS OF MYOGLOBIN MUTANTS - COMPARISON OF KINETIC AND EQUILIBRIUM METHODS** *BIOCHEMISTRY*
  Balasubramanian, S., Lambright, D. G., Simmons, J. H., Gill, S. J., Boxer, S. G.
  1994; 33 (27): 8355-8360
- **NEAR-INFRARED RESONANCE RAMAN-SPECTROSCOPY OF THE SPECIAL PAIR AND THE ACCESSORY BACTERIOCHLOROPHYLLS IN PHOTOSYNTHETIC REACTION CENTERS** *JOURNAL OF PHYSICAL CHEMISTRY*
  Cherepy, N. J., Shreve, A. P., Moore, L. J., Franzen, S., Boxer, S. G., Mathies, R. A.
  1994; 98 (23): 6023-6029
- **ANATOMY AND DYNAMICS OF A LIGAND-BINDING PATHWAY IN MYOGLOBIN - THE ROLES OF RESIDUE-45, RESIDUE-60, RESIDUE-64, AND RESIDUE-68** *BIOCHEMISTRY*
  Lambright, D. G., Balasubramanian, S., Decatur, S. M., Boxer, S. G.
  1994; 33 (18): 5518-5525

- **ULTRAFAST MEASUREMENTS OF GEMINATE RECOMBINATION OF NO WITH SITE-SPECIFIC MUTANTS OF HUMAN MYOGLOBIN** *JOURNAL OF MOLECULAR BIOLOGY*
  Petrich, J. W., Lambry, J. C., Balasubramanian, S., Lambright, D. G., Boxer, S. G., Martin, J. L.
  1994; 238 (3): 437-444
- **DIELECTRIC ASYMMETRY IN THE PHOTOSYNTHETIC REACTION-CENTER** *SCIENCE*
  Steffen, M. A., Lao, K. Q., Boxer, S. G.
  1994; 264 (5160): 810-816
- **DISCOVERY OF NEW LIGAND-BINDING PATHWAYS IN MYOGLOBIN BY RANDOM MUTAGENESIS** *NATURE STRUCTURAL BIOLOGY*
  Huang, X. H., Boxer, S. G.
  1994; 1 (4): 226-229
- **PSORALEN ANTISENSE OLIGONUCLEOTIDE CONTROL OF COLLAGENASE EXPRESSION - FEASIBILITY OF A LASER 2-PHOTON EFFECT**
  Hoeffler, W., Oh, D., Lin, M., Hultquist, K., Stanley, R., Boxer, S., Bauer, E.
  NATURE PUBLISHING GROUP.1994: 650–50
- **PROBING THE LIGAND-BINDING PATHWAYS IN MYOGLOBIN BY RANDOM MUTAGENESIS STRATEGY**
  Huang, X. H., Boxer, S. G.
  CELL PRESS.1994: A400–A400
- **HIGHER-ORDER STARK EFFECTS OF CAROTENOIDS IN PHOTOSYNTHETIC ANTENNA COMPLEX**
  LAO, K. Q., ZHOU, H. L., MOORE, L. J., BOXER, S. G.
  BIOPHYSICAL SOCIETY.1994: A114
- **DIELECTRIC ASYMMETRY IN THE PHOTOSYNTHETIC REACTION-CENTER**
  STEFFEN, M. A., LAO, K. Q., BOXER, S. G.
  BIOPHYSICAL SOCIETY.1994: A272
- **STARK-EFFECT SPECTROSCOPY OF TRYPTOPHAN**
  PIERCE, D. W., BOXER, S. G.
  BIOPHYSICAL SOCIETY.1994: A402
- **EFFECTS OF APPLIED ELECTRIC-FIELDS ON THE QUANTUM YIELDS OF THE INITIAL ELECTRON-TRANSFER STEPS IN BACTERIAL PHOTOSYNTHESIS .1. QUANTUM YIELD FAILURE** *JOURNAL OF PHYSICAL CHEMISTRY*
  Lao, K. Q., Franzen, S., Stanley, R. J., Lambright, D. G., Boxer, S. G.
  1993; 97 (50): 13165-13171
- **STARK-EFFECT SPECTROSCOPY OF THE 1250 NM P+ BAND OF RHODOBACTER-SPHAEROIDES REACTION CENTERS AND RELATED MODEL COMPOUNDS** *BIOCHIMICA ET BIOPHYSICA ACTA*
  Stocker, J. W., Hug, S., Boxer, S. G.
  1993; 1144 (3): 325-330
- **DYNAMICS OF PROTEIN RELAXATION IN SITE-SPECIFIC MUTANTS OF HUMAN MYOGLOBIN** *BIOCHEMISTRY*
  Lambright, D. G., Balasubramanian, S., Boxer, S. G.
  1993; 32 (38): 10116-10124
- **STARK-EFFECT (ELECTROABSORPTION) SPECTROSCOPY OF PHOTOSYNTHETIC REACTION CENTERS AT 1.5 K - EVIDENCE THAT THE SPECIAL PAIR HAS A LARGE EXCITED-STATE POLARIZABILITY** *BIOCHIMICA ET BIOPHYSICA ACTA*
  Middendorf, T. R., Mazzola, L. T., Lao, K. Q., Steffen, M. A., Boxer, S. G.
  1993; 1143 (2): 223-234
- **TEMPERATURE-DEPENDENCE OF THE ELECTRIC-FIELD MODULATION OF ELECTRON-TRANSFER RATES - CHARGE RECOMBINATION IN PHOTOSYNTHETIC REACTION CENTERS** *JOURNAL OF PHYSICAL CHEMISTRY*
  Franzen, S., Boxer, S. G.
  1993; 97 (23): 6304-6318
- **PERTURBATIONS OF THE DISTAL HEME POCKET IN HUMAN MYOGLOBIN MUTANTS PROBED BY INFRARED-SPECTROSCOPY OF BOUND CO - CORRELATION WITH LIGAND-BINDING KINETICS** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*

Balasubramanian, S., Lambright, D. G., Boxer, S. G.
1993; 90 (10): 4718-4722

- **PHOTOSYNTHETIC REACTION CENTER MUTAGENESIS VIA CHIMERIC RESCUE OF A NONFUNCTIONAL RHODOBACTER-CAPSULATUS PUF OPERON WITH SEQUENCES FROM RHODOBACTER-SPHAEROIDES** *PHOTOSYNTHESIS RESEARCH*
  Taguchi, A. K., Stocker, J. W., Boxer, S. G., Woodbury, N. W.
  1993; 36 (1): 43-58

- **DISTANCE DEPENDENCE OF ELECTRON-TRANSFER REACTIONS IN ORGANIZED SYSTEMS - THE ROLE OF SUPEREXCHANGE AND NON-CONDON EFFECTS IN PHOTOSYNTHETIC REACTION CENTERS** *JOURNAL OF PHYSICAL CHEMISTRY*
  Franzen, S., Goldstein, R. F., Boxer, S. G.
  1993; 97 (12): 3040-3053

- **CO RECOMBINATION TO HUMAN MYOGLOBIN MUTANTS IN GLYCEROL WATER SOLUTIONS** *BIOCHEMISTRY*
  Balasubramanian, S., Lambright, D. G., Marden, M. C., Boxer, S. G.
  1993; 32 (9): 2202-2212

- **SPECTROSCOPIC AND REDOX PROPERTIES OF SYM1 AND (M)F195H - RHODOBACTER-CAPSULATUS REACTION CENTER SYMMETRY MUTANTS WHICH AFFECT THE INITIAL ELECTRON-DONOR** *BIOCHEMISTRY*
  Stocker, J. W., Taguchi, A. K., MURCHISON, H. A., Woodbury, N. W., Boxer, S. G.
  1992; 31 (42): 10356-10362

- **BIOCHEMICAL-CHARACTERIZATION AND ELECTRON-TRANSFER REACTIONS OF SYM1, A RHODOBACTER-CAPSULATUS REACTION CENTER SYMMETRY MUTANT WHICH AFFECTS THE INITIAL ELECTRON-DONOR** *BIOCHEMISTRY*
  Taguchi, A. K., Stocker, J. W., ALDEN, R. G., Causgrove, T. P., Peloquin, J. M., Boxer, S. G., Woodbury, N. W.
  1992; 31 (42): 10345-10355

- **ELECTRIC-FIELD EFFECTS ON KINETICS OF ELECTRON-TRANSFER REACTIONS - CONNECTION BETWEEN EXPERIMENT AND THEORY** *CHEMICAL PHYSICS LETTERS*
  Franzen, S., Lao, K. Q., Boxer, S. G.
  1992; 197 (4-5): 380-388

- **SELECTIVE EXAMINATION OF HEME PROTEIN AZIDE LIGAND DISTAL GLOBIN INTERACTIONS BY VIBRATIONAL CIRCULAR-DICHROISM** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Bormett, R. W., Asher, S. A., Larkin, P. J., GUSTAFSON, W. G., Ragunathan, N., Freedman, T. B., Nafie, L. A., Balasubramanian, S., Boxer, S. G., Yu, N. T., Gersonde, K., Noble, R. W., Springer, et al
  1992; 114 (17): 6864-6867

- **DIELECTRIC-RELAXATION IN A PROTEIN MATRIX** *JOURNAL OF PHYSICAL CHEMISTRY*
  Pierce, D. W., Boxer, S. G.
  1992; 96 (13): 5560-5566

- **STUDIES OF CRYSTALLINE AGGREGATES OF PHEOPHORBIDE AND BACTERIOPHEOPHORBIDE BY ELECTROABSORPTION (STARK-EFFECT) SPECTROSCOPY AND POWDER X-RAY-DIFFRACTION** *JOURNAL OF LUMINESCENCE*
  Gottfried, D. S., Boxer, S. G.
  1992; 51 (1-3): 39-50

- **PHOTOCHEMICAL HOLE-BURNING SPECTROSCOPY OF BOVINE RHODOPSIN AND BACTERIORHODOPSIN** *JOURNAL OF PHYSICAL CHEMISTRY*
  Loppnow, G. R., Mathies, R. A., Middendorf, T. R., Gottfried, D. S., Boxer, S. G.
  1992; 96 (2): 737-745

- **PROTEIN RELAXATION DYNAMICS IN HUMAN MYOGLOBIN** *CHEMICAL PHYSICS*
  Lambright, D. G., Balasubramanian, S., Boxer, S. G.
  1991; 158 (2-3): 249-260

- **RAPID-FLOW RESONANCE RAMAN-SPECTROSCOPY OF BACTERIAL PHOTOSYNTHETIC REACTION CENTERS** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Shreve, A. P., Cherepy, N. J., Franzen, S., Boxer, S. G., Mathies, R. A.
  1991; 88 (24): 11207-11211

- **PHOTOCHEMICAL HOLE-BURNING SPECTROSCOPY OF A PHOTOSYNTHETIC REACTION CENTER MUTANT WITH ALTERED CHARGE SEPARATION KINETICS - PROPERTIES AND DECAY OF THE INITIALLY EXCITED-STATE** *JOURNAL OF PHYSICAL CHEMISTRY*
  Middendorf, T. R., Mazzola, L. T., GAUL, D. F., Schenck, C. C., Boxer, S. G.
  1991; 95 (24): 10142-10151

- **ELECTROABSORPTION (STARK-EFFECT) SPECTROSCOPY OF MONORUTHENIUM AND BIRUTHENIUM CHARGE-TRANSFER COMPLEXES - MEASUREMENTS OF CHANGES IN DIPOLE-MOMENTS AND OTHER ELECTROOPTIC PROPERTIES** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Oh, D. H., Sano, M., Boxer, S. G.
  1991; 113 (18): 6880-6890

- **STARK-EFFECT SPECTROSCOPY OF CAROTENOIDS IN PHOTOSYNTHETIC ANTENNA AND REACTION CENTER COMPLEXES** *BIOCHIMICA ET BIOPHYSICA ACTA*
  Gottfried, D. S., Steffen, M. A., Boxer, S. G.
  1991; 1059 (1): 76-90

- **STARK-EFFECT SPECTROSCOPY OF BACTERIOCHLOROPHYLL IN LIGHT-HARVESTING COMPLEXES FROM PHOTOSYNTHETIC BACTERIA** *BIOCHIMICA ET BIOPHYSICA ACTA*
  Gottfried, D. S., Stocker, J. W., Boxer, S. G.
  1991; 1059 (1): 63-75

- **ELECTRIC-FIELD EFFECTS ON EMISSION-LINE SHAPES WHEN ELECTRON-TRANSFER COMPETES WITH EMISSION - AN EXAMPLE FROM PHOTOSYNTHETIC REACTION CENTERS** *JOURNAL OF PHYSICAL CHEMISTRY*
  Lockhart, D. J., HAMMES, S. L., Franzen, S., Boxer, S. G.
  1991; 95 (6): 2217-2226

- **LARGE PROTEIN-INDUCED DIPOLES FOR A SYMMETRICAL CAROTENOID IN A PHOTOSYNTHETIC ANTENNA COMPLEX** *SCIENCE*
  Gottfried, D. S., Steffen, M. A., Boxer, S. G.
  1991; 251 (4994): 662-665

- **MANIPULATION OF ELECTRON-TRANSFER REACTION-RATES WITH APPLIED ELECTRIC-FIELDS - APPLICATION TO LONG-DISTANCE CHARGE RECOMBINATION IN PHOTOSYNTHETIC REACTION CENTERS** *ADVANCES IN CHEMISTRY SERIES*
  Franzen, S., Boxer, S. G.
  1991: 149-162

- **MANIPULATION OF ELECTRON-TRANSFER REACTION-RATES WITH APPLIED ELECTRIC-FIELDS - APPLICATION TO LONG-DISTANCE CHARGE RECOMBINATION IN PHOTOSYNTHETIC REACTION CENTERS** *SYMP ON ELECTRON TRANSFER IN INORGANIC, ORGANIC, AND BIOLOGICAL SYSTEMS*
  Franzen, S., Boxer, S. G.
  AMER CHEMICAL SOC.1991: 149–162

- **ELECTRIC-FIELD EFFECTS ON THE INITIAL ELECTRON-TRANSFER KINETICS IN BACTERIAL PHOTOSYNTHETIC REACTION CENTERS** *JOURNAL OF PHYSICAL CHEMISTRY*
  Lockhart, D. J., Kirmaier, C., HOLTEN, D., Boxer, S. G.
  1990; 94 (18): 6987-6995

- **STARK SPECTROSCOPY OF THE RHODOBACTER-SPHAEROIDES REACTION CENTER HETERODIMER MUTANT** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  HAMMES, S. L., Mazzola, L., Boxer, S. G., GAUL, D. F., Schenck, C. C.
  1990; 87 (15): 5682-5686

- **ELECTRIC-FIELD MODULATION OF ELECTRON-TRANSFER REACTION-RATES IN ISOTROPIC SYSTEMS - LONG-DISTANCE CHARGE RECOMBINATION IN PHOTOSYNTHETIC REACTION CENTERS** *JOURNAL OF PHYSICAL CHEMISTRY*
  Franzen, S., Goldstein, R. F., Boxer, S. G.
  1990; 94 (12): 5135-5149

- **X-RAY CRYSTAL-STRUCTURE OF A RECOMBINANT HUMAN MYOGLOBIN MUTANT AT 2.8 A RESOLUTION** *JOURNAL OF MOLECULAR BIOLOGY*
  Hubbard, S. R., Hendrickson, W. A., Lambright, D. G., Boxer, S. G.
  1990; 213 (2): 215-218

- **DYNAMICS OF LIGAND RECOMBINATION IN SITE SPECIFIC MUTANTS OF HUMAN MYOGLOBIN**
  Lambright, D. G., Balasubramanian, S., Boxer, S. G., Petrich, J. W., Lambry, J. C., Martin, J. L.
  CELL PRESS.1990: A240–A240
- **CHARACTERIZATION OF THE OVERALL AND INTERNAL DYNAMICS OF SHORT OLIGONUCLEOTIDES BY DEPOLARIZED DYNAMIC LIGHT-SCATTERING AND NMR RELAXATION MEASUREMENTS** *BIOCHEMISTRY*
  Eimer, W., Williamson, J. R., Boxer, S. G., Pecora, R.
  1990; 29 (3): 799-811
- **MECHANISMS OF LONG-DISTANCE ELECTRON-TRANSFER IN PROTEINS - LESSONS FROM PHOTOSYNTHETIC REACTION CENTERS** *ANNUAL REVIEW OF BIOPHYSICS AND BIOPHYSICAL CHEMISTRY*
  Boxer, S. G.
  1990; 19: 267-299
- **EXCITED-STATES, ELECTRON-TRANSFER REACTIONS, AND INTERMEDIATES IN BACTERIAL PHOTOSYNTHETIC REACTION CENTERS** *JOURNAL OF PHYSICAL CHEMISTRY*
  Boxer, S. G., Goldstein, R. A., Lockhart, D. J., Middendorf, T. R., Takiff, L.
  1989; 93 (26): 8280-8294
- **THE EFFECT OF VERY HIGH MAGNETIC-FIELDS ON THE REACTION DYNAMICS IN BACTERIAL REACTION CENTERS - IMPLICATIONS FOR THE REACTION-MECHANISM** *BIOCHIMICA ET BIOPHYSICA ACTA*
  Goldstein, R. A., Boxer, S. G.
  1989; 977 (1): 78-86
- **THE EFFECT OF VERY HIGH MAGNETIC-FIELDS ON THE DELAYED FLUORESCENCE FROM ORIENTED BACTERIAL REACTION CENTERS** *BIOCHIMICA ET BIOPHYSICA ACTA*
  Goldstein, R. A., Boxer, S. G.
  1989; 977 (1): 70-77
- **LIGAND AND PROTON-EXCHANGE DYNAMICS IN RECOMBINANT HUMAN MYOGLOBIN MUTANTS** *JOURNAL OF MOLECULAR BIOLOGY*
  Lambright, D. G., Balasubramanian, S., Boxer, S. G.
  1989; 207 (1): 289-299
- **ELECTROSTATIC INTERACTIONS IN WILD-TYPE AND MUTANT RECOMBINANT HUMAN MYOGLOBINS** *BIOCHEMISTRY*
  Varadarajan, R., Lambright, D. G., Boxer, S. G.
  1989; 28 (9): 3771-3781
- **MULTINUCLEAR NMR-STUDIES OF DNA HAIRPINS .1. STRUCTURE AND DYNAMICS OF D(CGCGTTGTTCGCG)** *BIOCHEMISTRY*
  Williamson, J. R., Boxer, S. G.
  1989; 28 (7): 2819-2831
- **MULTINUCLEAR NMR-STUDIES OF DNA HAIRPINS .2. SEQUENCE-DEPENDENT STRUCTURAL VARIATIONS** *BIOCHEMISTRY*
  Williamson, J. R., Boxer, S. G.
  1989; 28 (7): 2831-2836
- **EFFECTS OF BURIED IONIZABLE AMINO-ACIDS ON THE REDUCTION POTENTIAL OF RECOMBINANT MYOGLOBIN** *SCIENCE*
  Varadarajan, R., Zewert, T. E., Gray, H. B., Boxer, S. G.
  1989; 243 (4887): 69-72
- **STRUCTURE-BASED ANALYSIS OF THE INITIAL ELECTRON-TRANSFER STEP IN BACTERIAL PHOTOSYNTHESIS - ELECTRIC-FIELD INDUCED FLUORESCENCE ANISOTROPY** *JOURNAL OF CHEMICAL PHYSICS*
  Lockhart, D. J., Goldstein, R. F., Boxer, S. G.
  1988; 89 (3): 1408-1415
- **ENERGETICS OF INITIAL CHARGE SEPARATION IN BACTERIAL PHOTOSYNTHESIS - THE TRIPLET DECAY-RATE IN VERY HIGH MAGNETIC-FIELDS** *BIOCHIMICA ET BIOPHYSICA ACTA*
  Goldstein, R. A., Takiff, L., Boxer, S. G.
  1988; 934 (2): 253-263
- **PHOSPHORESCENCE FROM THE PRIMARY ELECTRON-DONOR IN RHODOBACTER-SPHAEROIDES AND RHODOPSEUDOMONAS-VIRIDIS REACTION CENTERS** *BIOCHIMICA ET BIOPHYSICA ACTA*

Takiff, L., Boxer, S. G.
1988; 932 (3): 325-334

- **ELECTRIC-FIELD MODULATION OF THE FLUORESCENCE FROM RHODOBACTER-SPHAEROIDES REACTION CENTERS** *CHEMICAL PHYSICS LETTERS*
  Lockhart, D. J., Boxer, S. G.
  1988; 144 (3): 243-250
- **SYNTHESIS OF A THYMIDINE PHOSPHORAMIDITE LABELED WITH C-13 AT C6 - RELAXATION STUDIES OF THE LOOP REGION IN A C-13 LABELED DNA HAIRPIN** *NUCLEIC ACIDS RESEARCH*
  Williamson, J. R., Boxer, S. G.
  1988; 16 (4): 1529-1540
- **STARK-EFFECT SPECTROSCOPY OF RHODOBACTER-SPHAEROIDES AND RHODOPSEUDOMONAS-VIRIDIS REACTION CENTERS** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Lockhart, D. J., Boxer, S. G.
  1988; 85 (1): 107-111
- **EFFECTS OF NUCLEAR-SPIN POLARIZATION ON REACTION DYNAMICS IN PHOTOSYNTHETIC BACTERIAL REACTION CENTERS** *BIOPHYSICAL JOURNAL*
  Goldstein, R. A., Boxer, S. G.
  1987; 51 (6): 937-946
- **MAGNITUDE AND DIRECTION OF THE CHANGE IN DIPOLE-MOMENT ASSOCIATED WITH EXCITATION OF THE PRIMARY ELECTRON-DONOR IN RHODOPSEUDOMONAS-SPHAEROIDES REACTION CENTERS** *BIOCHEMISTRY*
  Lockhart, D. J., Boxer, S. G.
  1987; 26 (3): 664-668
- **REVERSIBLE PHOTOCHEMICAL HOLEBURNING IN RHODOPSEUDOMONAS-VIRIDIS REACTION CENTERS** *FEBS LETTERS*
  Boxer, S. G., Middendorf, T. R., Lockhart, D. J.
  1986; 200 (1): 237-241
- **PHOTOCHEMICAL HOLE-BURNING IN PHOTOSYNTHETIC REACTION CENTERS** *CHEMICAL PHYSICS LETTERS*
  Boxer, S. G., Lockhart, D. J., Middendorf, T. R.
  1986; 123 (6): 476-482
- **FLUORESCENCE LIFETIMES WITH A SYNCHROTRON SOURCE** *METHODS IN ENZYMOLOGY*
  Boxer, S. G., BUCKS, R. R.
  1986; 130: 484-493
- **CLONING, EXPRESSION IN ESCHERICHIA-COLI, AND RECONSTITUTION OF HUMAN MYOGLOBIN** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Varadarajan, R., Szabo, A., Boxer, S. G.
  1985; 82 (17): 5681-5684
- **EFFECT OF MAGNETIC-FIELDS ON THE TRIPLET-STATE LIFETIME IN PHOTOSYNTHETIC REACTION CENTERS - EVIDENCE FOR THERMAL REPOPULATION OF THE INITIAL RADICAL PAIR** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Chidsey, C. E., Takiff, L., Goldstein, R. A., Boxer, S. G.
  1985; 82 (20): 6850-6854
- **EXCITATION TRANSPORT AND TRAPPING IN A SYNTHETIC CHLOROPHYLLIDE SUBSTITUTED HEMOGLOBIN - ORIENTATION OF THE CHLOROPHYLL-S1 TRANSITION DIPOLE** *BIOCHEMISTRY*
  Moog, R. S., Kuki, A., Fayer, M. D., Boxer, S. G.
  1984; 23 (7): 1564-1571
- **MAGNETIC-FIELD EFFECTS ON THE LIFETIME OF THE TRIPLET-STATE IN PHOTOSYNTHETIC REACTION CENTERS - EVIDENCE FOR THERMAL RE-POPULATION OF THE PRIMARY RADICAL PAIR**
  Boxer, S. G., Chidsey, C. E., Takiff, L., Goldstein, R.
  CELL PRESS.1984: A215–A215

- **CHEMICALLY-INDUCED DYNAMIC NUCLEAR-POLARIZATION STUDIES OF GUANOSINE IN NUCLEOTIDES, DINUCLEOTIDES, AND OLIGONUCLEOTIDES** *BIOCHEMISTRY*
  McCord, E. F., MORDEN, K. M., Pardi, A., Tinoco, I., Boxer, S. G.
  1984; 23 (9): 1926-1934
- **MAGNETIC-FIELD DEPENDENCE OF RADICAL-PAIR DECAY KINETICS AND MOLECULAR TRIPLET QUANTUM YIELD IN QUINONE-DEPLETED REACTION CENTERS** *BIOCHIMICA ET BIOPHYSICA ACTA*
  Chidsey, C. E., Kirmaier, C., HOLTEN, D., Boxer, S. G.
  1984; 766 (2): 424-437
- **CHEMICALLY-INDUCED DYNAMIC NUCLEAR-POLARIZATION STUDIES OF YEAST TRANSFER RNAPHE** *BIOCHEMISTRY*
  McCord, E. F., MORDEN, K. M., Tinoco, I., Boxer, S. G.
  1984; 23 (9): 1935-1939
- **CHLOROPHYLLIDE-SUBSTITUTED HEMOGLOBIN TETRAMERS AND HYBRIDS - PREPARATION, CHARACTERIZATION, AND ENERGY-TRANSFER** *BIOCHEMISTRY*
  Kuki, A., Boxer, S. G.
  1983; 22 (12): 2923-2933
- **MODEL REACTIONS IN PHOTOSYNTHESIS** *BIOCHIMICA ET BIOPHYSICA ACTA*
  Boxer, S. G.
  1983; 726 (4): 265-292
- **ANISOTROPIC MAGNETIC-FIELD EFFECTS FOR RADICAL PAIR REACTIONS IN THE SOLID-STATE**
  Boxer, S. G., Chidsey, C. E., Roelofs, M. G.
  AMER CHEMICAL SOC.1983: 98-PHYS
- **SPIN DYNAMICS AND MAGNETIC-FIELD EFFECTS IN PHOTOSYNTHETIC REACTION CENTERS**
  Boxer, S. G., Chidsey, C. E., Roelofs, M. G.
  AMER INST PHYSICS.1983: 1395–95
- **MAGNETIC-FIELD EFFECTS ON REACTION YIELDS IN THE SOLID-STATE - AN EXAMPLE FROM PHOTOSYNTHETIC REACTION CENTERS** *ANNUAL REVIEW OF PHYSICAL CHEMISTRY*
  Boxer, S. G., Chidsey, C. E., Roelofs, M. G.
  1983; 34: 389-417
- **ANISOTROPIC MAGNETIC-INTERACTIONS IN THE PRIMARY RADICAL ION-PAIR OF PHOTOSYNTHETIC REACTION CENTERS** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA-BIOLOGICAL SCIENCES*
  Boxer, S. G., Chidsey, C. E., Roelofs, M. G.
  1982; 79 (15): 4632-4636
- **PICOSECOND SPECTROSCOPIC STUDY OF CHLOROPHYLL BASED MODELS FOR THE PRIMARY PHOTOCHEMISTRY OF PHOTOSYNTHESIS** *JOURNAL OF PHYSICAL CHEMISTRY*
  BUCKS, R. R., Netzel, T. L., Fujita, I., Boxer, S. G.
  1982; 86 (11): 1947-1955
- **ANISOTROPIC MAGNETIC-INTERACTIONS IN THE PRIMARY RADICAL ION-PAIR OF PHOTOSYNTHETIC REACTION CENTERS**
  Boxer, S. G., Chidsey, C. E., Roelofs, M. G.
  CELL PRESS.1982: A111–A111
- **VISCOSITY DEPENDENCE OF THE ROTATIONAL REORIENTATION OF RHODAMINE-B IN MONO-ALCOHOL AND POLY-ALCOHOL - PICOSECOND TRANSIENT GRATING EXPERIMENTS** *JOURNAL OF PHYSICAL CHEMISTRY*
  Moog, R. S., Ediger, M. D., Boxer, S. G., Fayer, M. D.
  1982; 86 (24): 4694-4700
- **ON THE REFRACTIVE-INDEX CORRECTION IN LUMINESCENCE SPECTROSCOPY - COMMENT** *CHEMICAL PHYSICS LETTERS*
  Ediger, M. D., Moog, R. S., Boxer, S. G., Fayer, M. D.
  1982; 88 (1): 123-127
- **ORIENTED PROPERTIES OF THE CHLOROPHYLLS - ELECTRONIC ABSORPTION-SPECTROSCOPY OF ORTHORHOMBIC PYROCHLOROPHYLLIDE-A - APOMYOGLOBIN SINGLE-CRYSTALS**

Boxer, S. G., Kuki, A., OHARA, P., Katz, B., Xuong, N. H.
CELL PRESS.1982: A231–A231

- **CONTRIBUTIONS OF SPIN SPIN INTERACTIONS TO THE MAGNETIC-FIELD DEPENDENCE OF THE TRIPLET QUANTUM YIELD IN PHOTOSYNTHETIC REACTION CENTERS** *CHEMICAL PHYSICS LETTERS*
  Roelofs, M. G., Chidsey, C. E., Boxer, S. G.
  1982; 87 (6): 582-588
- **DEPENDENCE OF THE YIELD OF A RADICAL-PAIR REACTION IN THE SOLID-STATE ON ORIENTATION IN A MAGNETIC-FIELD** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Boxer, S. G., Chidsey, C. E., Roelofs, M. G.
  1982; 104 (9): 2674-2675
- **USE OF LARGE MAGNETIC-FIELDS TO PROBE PHOTOINDUCED ELECTRON-TRANSFER REACTIONS - AN EXAMPLE FROM PHOTOSYNTHETIC REACTION CENTERS** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Boxer, S. G., Chidsey, C. E., Roelofs, M. G.
  1982; 104 (5): 1452-1454
- **ORIENTED PROPERTIES OF THE CHLOROPHYLLS - ELECTRONIC ABSORPTION-SPECTROSCOPY OF ORTHORHOMBIC PYROCHLOROPHYLLIDE ALPHA-APOMYOGLOBIN SINGLE-CRYSTALS** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA-BIOLOGICAL SCIENCES*
  Boxer, S. G., Kuki, A., Wright, K. A., Katz, B. A., Xuong, N. H.
  1982; 79 (4): 1121-1125
- **LASER CHEMICALLY-INDUCED DYNAMIC NUCLEAR-POLARIZATION STUDY OF THE REACTION BETWEEN PHOTO-EXCITED FLAVINS AND TRYPTOPHAN DERIVATIVES AT 360 MHZ** *BIOCHEMISTRY*
  McCord, E. F., BUCKS, R. R., Boxer, S. G.
  1981; 20 (10): 2880-2888
- **SPECTROSCOPIC STUDIES OF SYNTHETIC CHLOROPHYLL-PROTEIN COMPLEXES**
  Boxer, S. G., Wright, K. A.
  CELL PRESS.1981: A172–A172
- **THE EFFECT OF VERY LARGE MAGNETIC-FIELDS ON THE TRIPLET YIELD IN PHOTOSYNTHETIC REACTION CENTERS**
  Boxer, S. G., Chidsey, C. E., Roelofs, M. G.
  CELL PRESS.1981: A171–A171
- **CHLOROPHYLL AMINO-ACID INTERACTIONS IN SYNTHETIC MODELS** *ISRAEL JOURNAL OF CHEMISTRY*
  Boxer, S. G., BUCKS, R. R.
  1981; 21 (4): 259-264
- **UV-EXCIMER LASER CHEMICALLY-INDUCED DYNAMIC NUCLEAR-POLARIZATION OF AMINO-ACIDS AT 360-MHZ** *BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS*
  McCord, E. F., Boxer, S. G.
  1981; 100 (4): 1436-1443
- **SOLUTION PROPERTIES OF SYNTHETIC CHLOROPHYLLIDE-APOMYOGLOBIN AND "BACTERIOCHLOROPHYLLIDE-APOMYOGLOBIN COMPLEXES** *BIOCHEMISTRY*
  Wright, K. A., Boxer, S. G.
  1981; 20 (26): 7546-7556
- **THE EFFECT OF LARGE MAGNETIC-FIELDS AND THE G-FACTOR DIFFERENCE ON THE TRIPLET POPULATION IN PHOTOSYNTHETIC REACTION CENTERS** *CHEMICAL PHYSICS LETTERS*
  Chidsey, C. E., Roelofs, M. G., Boxer, S. G.
  1980; 74 (1): 113-118
- **CHROMOPHORE ORGANIZATION IN PHOTOSYNTHETIC REACTION CENTERS - HIGH-RESOLUTION MAGNETOPHOTOSELECTION** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Boxer, S. G., Roelofs, M. G.
  1979; 76 (11): 5636-5640

- **PREPARATION AND PROPERTIES OF A CHLOROPHYLLIDE-APOMYOGLOBIN COMPLEX** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Boxer, S. G., Wright, K. A.
  1979; 101 (22): 6791-6794

- **PHOTOPROCESSES IN COVALENTLY LINKED PYROCHLOROPHYLLIDE DIMER - TRIPLET-STATE FORMATION AND OPENING AND CLOSING OF HYDROXYLIC LINKAGES** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Periasamy, N., Linschitz, H., CLOSS, G. L., Boxer, S. G.
  1978; 75 (6): 2563-2566

- **EFFECT OF MAGNESIUM COORDINATION ON C-13 AND N-15 MAGNETIC-RESONANCE SPECTRA OF CHLOROPHYLL-A - RELATIVE ENERGIES OF NITROGEN N-PI-STAR STATES AS DEDUCED FROM A COMPLETE ASSIGNMENT OF CHEMICAL-SHIFTS** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Boxer, S. G., CLOSS, G. L., Katz, J. J.
  1974; 96 (22): 7058-7066