

# CV Petra Fromme

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## ***Academic Positions***

- 2012 - present** Paul V Galvin Professor, Arizona State University
- 2009 - present** Member of the graduate faculty in the Biological Design Program, Arizona State University
- 2008 - present** Member of the graduate faculty at the Plant Biology Program, Arizona State University
- 2007 - present** Affiliate faculty member, Department of Physics, Arizona State University
- 2002 - present** Professor of Chemistry and Biochemistry, Arizona State University
- 1999 - 2002** Associate Professor, (C2) Max Volmer Institute, Chemistry Department, Technical University, Berlin
- 1993 - 1999** Assistant Professor, (C1) Max Volmer Institute, Chemistry Department, Technical University, Berlin
- 1985 - 1993** Teaching and Research Assistant, Max Volmer Institute, Chemistry Department, Technical University, Berlin

## ***Education/Scientific Degrees***

- 1983** BS in Biochemistry (Vordiplom), Department of Chemistry, Free University Berlin
- 1985** MS in Biochemistry (Diplom), Department of Chemistry, Free University Berlin

- 1988** Ph.D. in: Chemistry (Dr. rer. nat), Department of Chemistry, Technical University Berlin
- 1998** Habilitation in Physical Chemistry, Department of Chemistry, Technical University Berlin

### ***Awards and Honors***

- 1989** PhD thesis recognized for the outstanding doctoral thesis with the Joachim-Tiburtius-Award
- 2001** Lemberg Fellowship of the Australian Academy of Science
- 2001** Robin Hill Award of the International Photosynthesis Society
- 2001** Biologie 2001 Award of the Academy of Science of Göttingen
- 2009** Visiting travel fellowship, University of Sydney
- 2012** Faculty Achievement Award for Defining Edge Research: Natural Sciences and Mathematics. Arizona State University
- 2012** Paul V Galvin Professorship awarded
- 2014** Director of the Center of Applied Structural Discovery

### ***Professional Activities and Committee Service***

- 1986 -** Member of the Society for Biological Chemistry
- 2001 -** Member of Faculty of 1000
- 2004 -** Member of the Biophysical Society
- 2004 -** Member of the International Society of Photosynthesis Research
- 2005 -** Member of the American Chemical Society
- 2006 -** Member of the Advisory Board of the Centre for Membrane Pumps in Cells and Disease (PUMPKin), Aarhus, Denmark
- 2008-2012** NIH, member of the Biochemistry and Biophysics of Membranes (BBM) study section of the NIH

### ***Synergistic Activities***

Series of talks at High Schools and for the general public, High School students performing projects in my lab • Presented talks on research topics at various industrial (“Science Meets Industry”) exhibitions and industrial meetings

### ***Collaborators (only group leaders are listed)***

**Allen**, James P ASU, **Assmann**, Ralf DESY, **Blankenship**, Robert U. of Washington, **Betzel**, Christian, U of Hamburg, **Boekema**, Egbert Rijksuniversiteit Groningen, **Bogan**, Michael J PULSE Inst., **Borstedt**, Christian LCLS, SLAC, **Bottin**, Herve CEA Saclay, **Boutet**, Sebastien. LCLS, SLAC, **Brown**, Michael University of Arizona, **Britt**, David. UC Davis, **Brunger**, Axel U. of Stanford, **Chang**, Goeffrey A UC San Diego, **Caffrey**, Martin Trinity College Dublin, **Chapman**, Henry N U of Hamburg/DESY, **Chen**, Min U of Sydney, **Cherezov**, Vadim Scripps Res. Inst., **Chou**, James J Harvard, **Cogdell**, Richard U of Glasgow, **Cramer**, William Purdue U, **Doak**, Bruce ASU/MPI Heidelberg, **Dubois**, Ray ASU, **Dumont**, Mark E U of Rochester, **Fleming**, Graham. R., UC Berkeley, **Frank**, Mathias Lawrence Livermore National. Lab., **Fox**, Brian A U of Wisconsin-Madison, **Ghirlanda**, Giovanna ASU, **Golbeck**, John Penn State University, **Hajdu**, Janos Uppsala University, **Gust**, Devens ASU, **Hau-Riege**, Stefan P Lawrence Livermore National Lab., **Larkum**, Anthony U of Sydney/UTS Sydney, **Liu**, Yan ASU, **Liu**, Wei Scripps/ASU, **Hendrickson**, Wayne A U of Columbia, **Holton**, James M ALS/UC San Francisco, **Hogue**, Brenda ASU, **Jankowiak**, Richard U. of Toronto, **Kärtner**, Franz U of Hamburg/ DESY, **Kerfeld**, Cheryl UC Berkeley, **Kolber**, Dorota Monterey Bay Aquarium Research Inst., **Kumar**, Sudhir ASU, Labaer Joshua ASU, **Lattmann**, Edward HWI Buffalo, **Liu**, Wei, Scripps/ASU, **Liu**, Yan, ASU, **Love**, James Einstein College NY, **Malkowski**, Michael G HWI U of Buffalo, **Marchesini**, Stefano ALS Berkeley Nat. Lab, **Moffat**, Keith U of Chicago, **Moore**, Anna & Tom ASU, **Mor**, Tsafrir ASU, **Mujica**, Vladimiro, **Nelson**, Nathan Tel Aviv University, **Neutze**, Richard Göteborg U., **Rees**, Doug C California Institute of Technology, **Redding**, Kevin ASU, **Redecke**, Lars U. of Luebeck, **Rost**, Burkhard TU-Munich, **Sali**, Andrej UC San Francisco, **Sayres**, Scott ASU, **Schlichting**, Ilme MPI fuer medizinische Forschung Heidelberg, **Ozkan**, S Banu ASU, **Saldin** Dilano University of Wisconsin-Milwaukee, **Ros**, Alexandra ASU, **Schulten**, Klaus J Beckmann Inst. Urbana, **Seemann**, Ned New York University, **Schmidt**, Kevin ASU, **Schmidt**, Marius U of Wisconsin Madison, **Setif**, Pierre CEA Saclay, **Shapiro**, David ALS/ Lawrence Berkeley National Lab., **Simpson**, Garth Purdue U, **Spence**, John HC ASU, **Stevens**, Ray Scripps Res. Inst., **Stokes**, David L New York University, **Soll**, Juergen NMU Muenchen, **Stowell**, Michael HB U of Colorado Boulder, **Stroud**, Robert UC San Francisco, **Strüder**, Lothar TU Munich, **Ullrich**, Joachim Physikalisch Technische Bundesanstalt, **van Thor**, Jasper Imperial College London, **Wachter**, Rebekka ASU, **Webber**, Andreas U of Duesseldorf, **Weierstall**, Uwe ASU, **Whitelegge**, Julian UCLA, **Wiener**, Michael C U of Virginia, **Williams**, Garth J LCLS, SLAC, **Woodbury**, Neal ASU, **Yan**, Hao ASU, **Yarger**, Jeff ASU, **Zickermann**, Wolfgang U of Frankfurt, **Xia**, Di, NIH

## **Publication List**

- (142) J. Tenboer, S. Basu, N. Zatsepin, K. Pande, D. Milathianaki, M. Frank, M. Hunter, S. Boutet, G.J. Williams, J.E. Koglin, D. Oberthuer, M. Heymann, C. Kupitz, C. Conrad, J. Coe, S. Roy-Chowdhury, U. Weierstall, D. James, D.J. Wang, T. Grant, A. Barty, O. Yefanov, J. Scales, C. Gati, C. Seuring, V. Srajer, R. Henning, P. Schwander, R. Fromme, A. Ourmazd, K. Moffat, J.J. Van Thor, J.C.H. Spence, P. Fromme, H.N. Chapman, M. Schmidt, Time-resolved serial crystallography captures high-resolution intermediates of photoactive yellow protein, **Science**, 346 (2014) 1242-1246.  
*Time-resolved serial crystallography captures high-resolution intermediates of photoactive yellow protein*
- (141) D. Arnlund, L.C. Johansson, C. Wickstrand, A. Barty, G.J. Williams, E. Malmerberg, J. Davidsson, D. Milathianaki, D.P. DePonte, R.L. Shoeman, D.J. Wang, D. James, G. Katona, S. Westenhoff, T.A. White, A. Aquila, S. Bari, P. Berntsen, M. Bogan, T.B. van Driel, R.B. Doak, K.S. Kjaer, M. Frank, R. Fromme, I. Grotjohann, R. Henning, M.S. Hunter, R.A. Kirian, I. Kosheleva, C. Kupitz, M.N. Liang, A.V. Martin, M.M. Nielsen, M. Messerschmidt, M.M. Seibert, J. Sjöhamn, F. Stellato, U. Weierstall, N.A. Zatsepin, J.C.H. Spence, P. Fromme, I. Schlichting, S. Boutet, G. Groenhof, H.N. Chapman, R. Neutze, **Nature Methods**, 11 (2014) 923-926.  
*Visualizing a protein quake with time-resolved X-ray scattering at a free-electron laser*
- (140) C. Kupitz, S. Basu, I. Grotjohann, R. Fromme, N.A. Zatsepin, K.N. Rendek, M.S. Hunter, R.L. Shoeman, T.A. White, D.J. Wang, D. James, J.H. Yang, D.E. Cobb, B. Reeder, R.G. Sierra, H.G. Liu, A. Barty, A.L. Aquila, D. DePonte, R.A. Kirian, S. Bari, J.J. Bergkamp, K.R. Beyerlein, M.J. Bogan, C. Caleman, T.C. Chao, C.E. Conrad, K.M. Davis, H. Fleckenstein, L. Galli, S.P. Hau-Riege, S. Kassemeyer, H. Laksmono, M.N. Liang, L. Lomb, S. Marchesini, A.V. Martin, M. Messerschmidt, D. Milathianaki, K. Nass, A. Ros, S. Roy-Chowdhury, K. Schmidt, M. Seibert, J. Steinbrener, F. Stellato, L.F. Yan, C. Yoon, T.A. Moore, A.L. Moore, Y. Pushkar, G.J. Williams, S. Boutet, R.B. Doak, U. Weierstall, M. Frank, H.N. Chapman, J.C.H. Spence, P. Fromme, **Nature**, 513 (2014) 261-265  
*Serial time-resolved crystallography of photosystem II using a femtosecond X-ray laser*
- (139) P. Fromme, **Nature**, 505 (2014) 620-621.  
*Leading-edge lasers*
- (138) A. Deb, W. Johnson, D. Srinivas, L.Q. Chen, P. Fromme, T. Leket-Mor, Towards a Crystal Structure Of The Hiv-1 Membrane Protein, Vpu, **Protein Science**, 23 (2014) 234-235.  
*Towards a Crystal Structure of The HIV-1 Membrane Protein*
- (137) J.D. Flory, C.R. Simmons, S. Lin, T. Johnson, A. Andreoni, J. Zook, G. Ghirlanda, Y. Liu, H. Yan, P. Fromme, **J Am Chem Soc**, 136 (2014) 8283-8295.  
*Low Temperature Assembly of Functional 3D DNA-PNA-Protein Complexes,*
- (136) Z. Gong, S.A. Kessans, L.S. Song, K. Dorner, H.H. Lee, L.R. Meador, J. LaBaer, B.G.

- Hogue, T.S. Mor, P. Fromme, **Protein Science**, 23 (2014) 1607-1618.  
*Recombinant expression, purification, and biophysical characterization of the transmembrane and membrane proximal domains of HIV-1 gp41*
- (135) C. Kupitz, I. Grotjohann, C.E. Conrad, S. Roy-Chowdhury, R. Fromme, P. Fromme, **Philos T R Soc B**, 369 (2014).  
*Microcrystallization techniques for serial femtosecond crystallography using photosystem II from Thermosynechococcus elongatus as a model system,*
- (134) P. Tarakeshwar, J.L. Palma, G.P. Holland, P. Fromme, J.L. Yarger, V. Mujica, **J Phys Chem Lett**, 5 (2014) 3555-3559.  
*Probing the Nature of Charge Transfer at Nano-Bio Interfaces: Peptides on Metal Oxide Nanoparticles*
- (133) J.M. Martin-Garcia, D.T. Hansen, J. Zook, A.V. Loskutov, M.D. Robida, F.M. Craciunescu, K.F. Sykes, R.M. Wachter, P. Fromme, J.P. Allen, Purification and Biophysical Characterization of the CapA Membrane Protein FTT0807 from Francisella tularensis, **Biochemistry**, 53 (2014) 1958-1970.  
*Purification and Biophysical Characterization of the CapA Membrane Protein FTT0807 from Francisella tularensis*
- (132) J.D. Meza-Aguilar, P. Fromme, A. Torres-Larios, G. Mendoza-Hernandez, U. Hernandez-Chinas, R.A.A.E. de los Monteros, C.A.E. Campos, R. Fromme, **Biochem Bioph Res Co**, 445 (2014) 439-444.  
*X-ray crystal structure of the passenger domain of plasmid encoded toxin(Pet), an autotransporter enterotoxin from enteroaggregative Escherichia coli (EAEC)*
- (131) J.D. Zook, N. Sisco, G.N. Mo, D. Hansen, F. Craciunescu, B. Cherry, K. Sykes, W. van Horn, P. Fromme, High-Resolution NMR Spectroscopy Reveals Structure of Lipoprotein flpp3, **Biophys J**, 106 (2014) 193a-193a.  
*High-Resolution NMR Spectroscopy Reveals Structure of Lipoprotein flpp3*
- (130) J.M. Martin, D.T. Hansen, A. Loskutov, M.D. Robida, F.M. Craciunescu, K. Sykes, R.M. Wachter, P. Fromme, J.P. Allen, Sequence Analysis and Biophysical Characterization Reveals the Presence of a Long Disordered Region in the CapA Membrane Protein from F. Tularensis, **Biophys J**, 106 (2014) 688a-688a.  
*Sequence Analysis and Biophysical Characterization Reveals the Presence of a Long Disordered Region in the CapA Membrane Protein from F. Tularensis,*
- (129) K. Dorner, J.M. Garcia, C. Kupitz, R.M. Wachter, P. Fromme, Detection of Protein Nanocrystals Based on the Reversibility of Crystallization, **Biophys J**, 106 (2014) 458a-458a.  
*Detection of Protein Nanocrystals Based on the Reversibility of Crystallization*
- (128) H.H. Lee, I. Cherni, H. Yu, R. Fromme, J.D. Doran, I. Grotjohann, M. Mittman, S. Basu, A. Deb, K. Dorner, A. Aquila, A. Barty, S. Boutet, H.N. Chapman, R.B. Doak, M.S. Hunter, D. James, R.A. Kirian, C. Kupitz, R.M. Lawrence, H. Liu, K. Nass, I. Schlichting, K.E. Schmidt, M.M. Seibert, R.L. Shoeman, J.C. Spence, F. Stellato, U. Weierstall, G.J. Williams, C. Yoon, D. Wang, N.A. Zatsepin, B.G. Hogue, N. Matoba, P. Fromme, T.S.

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- (127) McSweeney S, Fromme P (2014) Crystallography: Sources of inspiration. **Nature** 505: 620-621  
*Crystallography: Sources of inspiration*
- (126) Uwe Weierstall, Daniel James, Chong Wang, Thomas A. White, Dingjie Wang, Wei Liu, John C. H. Spence, R. Bruce Doak, Garrett Nelson, Petra Fromme, Raimund Fromme, Ingo Grotjohann, Christopher Kupitz, Nadia A. Zatsepin, Haiguang Liu, Shibom Basu, Daniel Wacker, Gye Won Han, Vsevolod Katritch, Sébastien Boutet, Marc Messerschmidt, Garth J. Williams, Jason E. Koglin, M. Marvin Seibert, Markus Klinker, Cornelius Gati, Robert L. Shoeman, Anton Barty, Henry N. Chapman, Richard A. Kirian, Kenneth R. Beyerlein, Raymond C. Stevens, Dianfan Li, Syed T. A. Shah, Nicole Howe, Martin Caffrey, Vadim Cherezov **Nature Communications** 5, 3309 (2014).  
*Lipidic cubic phase injector facilitates membrane protein serial femtosecond crystallography.*
- (125) Johansson LC, Arnlund D, Katona G, White TA, Barty A, DePonte DP, Shoeman RL, Wickstrand C, Sharma A, Williams GJ, Aquila A, Bogan MJ, Caleman C, Davidsson J, Doak RB, Frank M, Fromme R, Galli L, Grotjohann I, Hunter MS, Kassemeyer S, Kirian RA, Kupitz C, Liang M, Lomb L, Malmerberg E, Martin AV, Messerschmidt M, Nass K, Redecke L, Seibert MM, Sjöhamn J, Steinbrener J, Stellato F, Wang D, Wahlgren WY, Weierstall U, Westenhoff S, Zatsepin NA, Boutet S, Spence JC, Schlichting I, Chapman HN, Fromme P, Neutze R (2013) **Nat Commun** 4: 2911  
*Structure of a photosynthetic reaction centre determined by serial femtosecond crystallography*
- (124) Liu W, Wacker D, Gati C, Han GW, James D, Wang D, Nelson G, Weierstall U, Katritch V, Barty A, Zatsepin NA, Li D, Messerschmidt M, Boutet S, Williams GJ, Koglin JE, Seibert MM, Wang C, Shah ST, Basu S, Fromme R, Kupitz C, Rendek KN, Grotjohann I, Fromme P, Kirian RA, Beyerlein KR, White TA, Chapman HN, Caffrey M, Spence JC, Stevens RC, Cherezov, V **Science**. (2013) 342: 1521-1524  
*Serial femtosecond crystallography of G protein-coupled receptors".*
- (123) Abdallah BG, Chao TC, Kupitz C, Fromme P, Ros A **ACS Nano** 7: 9129-9137  
*A Dielectrophoretic sorting of membrane protein nanocrystals.*
- (122) Abdallah BG, Kupitz C, Fromme P, Ros A, **ACS Nano** in press  
*Crystallization of the Large Membrane Protein Complex Photosystem I in a Microfluidic Channel*
- (121) Zook JD, Molugu TR, Jacobsen NE, Lin G, Soll J, Cherry BR, Brown MF, Fromme P **PLoS One** 8: e78116  
*High-resolution NMR reveals secondary structure and folding of amino Acid transporter from outer chloroplast membrane.*

(120) Flory JD, Shinde S, Lin S, Liu Y, Yan H, Ghirlanda G, Fromme P (2013) **J Am Chem Soc** 135: 6985-6993

*PNA-Peptide Assembly in a 3D DNA Nanocage at Room Temperature.*

(119) Pieper U, Schlessinger A, Kloppmann E, Chang GA, Chou JJ, Dumont ME, Fox BG, Fromme P, Hendrickson WA, Malkowski MG, Rees DC, Stokes DL, Stowell MHB, Wiener MC, Rost B, Stroud RM, Stevens RC, Sali A (2013). **Nature Structural & Molecular Biology** 20: 135-138

*Coordinating the impact of structural genomics on the human alpha-helical transmembrane proteome*

(118) Rendek KN, Fromme R, Grotjohann I, Fromme P (2013) **Acta Cryst. F-Structural Biology and Crystallization Communications** 69: 141-146

*Crystallization of a self-assembled three-dimensional DNA nanostructure.*

(117) Redecke L, Nass K, Deponte DP, White TA, Rehders D, Barty A, Stellato F, Liang M, Barends TR, Boutet S, Williams GJ, Messerschmidt M, Seibert MM, Aquila A, Arnlund D, Bajt S, Barth T, Bogan MJ, Coleman C, Chao TC, Doak RB, Fleckenstein H, Frank M, Fromme R, Galli L, Grotjohann I, Hunter MS, Johansson LC, Kassemeyer S, Katona G, Kirian RA, Koopmann R, Kupitz C, Lomb L, Martin AV, Mogk S, Neutze R, Shoeman RL, Steinbrener J, Timneanu N, Wang D, Weierstall U, Zatsepin NA, Spence JC, Fromme P, Schlichting I, Duszynski M, Betzel C, Chapman HN (2013) 339, 227-230 (published online in Science Nov 2012)

*Natively Inhibited Trypanosoma brucei Cathepsin B Structure Determined by Using an X-ray Laser.*

**This paper was highlighted as one of the 10 breakthroughs of the year in Science 2012**

(116) Boutet S, Lomb L, Williams GJ, Barends TR, Aquila A, Doak RB, Weierstall U, Deponte DP, Steinbrener J, Shoeman RL, Messerschmidt M, Barty A, White TA, Kassemeyer S, Kirian RA, Seibert MM, Montanez PA, Kenney C, Herbst R, Hart P, Pines J, Haller G, Gruner SM, Philipp HT, Tate MW, Hromalik M, Koerner LJ, van Bakel N, Morse J, Ghonsalves W, Arnlund D, Bogan MJ, Coleman C, Fromme R, Hampton CY, Hunter MS, Johansson L, Katona G, Kupitz C, Liang M, Martin AV, Nass K, Redecke L, Stellato F, Timneanu N, Wang D, Zatsepin NA, Schafer D, Defever J, Neutze R, Fromme P, Spence JC, Chapman HN, Schlichting I (2012) **Science** published online in Science Express May 31 2012

*High-Resolution Protein Structure Determination by Serial Femtosecond Crystallography.*

(115) Brunger AT, Adams PD, Fromme P, Fromme R, Levitt, M, Schroder GF (2012), **Structure**, 20 (6), pp 957-966

*Improving the Accuracy of Macromolecular Structure Refinement at 7 Ångström Resolution*

- (114) Yadavalli V, Jolley CC, Malleda C, Thangaraj B, Fromme P, Subramanyam R (2012) **PLoS One** 7: e35084  
*Alteration of proteins and pigments influence the function of photosystem I under iron deficiency from Chlamydomonas reinhardtii.*
- (113) Johansson LC, Arnlund D, White TA, Katona G, Deponte DP, Weierstall U, Doak RB, Shoeman RL, Lomb L, Malmerberg E, Davidsson J, Nass K, Liang M, Andreasson J, Aquila A, Bajt S, Barthelmess M, Barty A, Bogan MJ, Bostedt C, Bozek JD, Caleman C, Coffee R, Coppola N, Ekeberg T, Epp SW, Erk B, Fleckenstein H, Foucar L, Graafsma H, Gumprecht L, Hajdu J, Hampton CY, Hartmann R, Hartmann A, Hauser G, Hirsemann H, Holl P, Hunter MS, Kassemeyer S, Kimmel N, Kirian RA, Maia FR, Marchesini S, Martin AV, Reich C, Rolles D, Rudek B, Rudenko A, Schlichting I, Schulz J, Seibert MM, Sierra RG, Soltau H, Starodub D, Stellato F, Stern S, Struder L, Timneanu N, Ullrich J, Wahlgren WY, Wang X, Weidenspointner G, Wunderer C, Fromme P, Chapman HN, Spence JC, Neutze R (2012) **Nature Methods**, 9 (3) 263-5  
*Lipid phase membrane protein serial femtosecond crystallography.*
- (112) Aquila,A Hunter,MS, Doak,RB, Kirian,RA, Fromme,P, White,TA, Andreasson,J Arnlund,D, Saja,S, Bajt, Barends,TRM, Barthelmess,M, Bogan, MJ, Bostedt,C, Bottin,H, Bozek, JD, Caleman,C. Coppola, N, Davidsson, J, DePonte, DP, Elser,V, Epp, SW, Erk,B, Fleckenstein,H, Foucar, L, Frank,M, Fromme,R, Graafsma, H, Grotjohann,I. Gumprecht,L, Hajdu,J, Hampton,CY, Hartmann,A, Hartmann, R, Hau-Riege,S, Hauser,G, Hirsemann,H, Holl,P, Holton,JM, Hömke,A, Johansson,L, Kimmel,N, Kassemeyer,S, Krasniqi,F, Kühne,K-U, Liang,M, Lomb,L, Malmerberg,E, Marchesini,S, Martin,AV, Maia, F RNC, Messerschmidt, M, Nass,K, Reich,C, Neutze,R, Rolles, D, Rudek,B, Rudenko,A, Schlichting,I, Schmidt,C, Schmidt,KE, Schulz,J, Seibert,M, Shoeman,RL, Sierra,R, Soltau,H, Starodub,D, Stellato,F, Stern,S, Strüder,L, Timneanu,N, Ullrich,J, Wang,X, Williams,GJ, Weidenspointner,G, Weierstall,U, Wunderer,C, Barty,A, Spence,JHC, and Chapman, HN (2012) **Optics Express**. 20 (3), 2706-16  
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- (109) Lomb, L, Barends,TRM, Kassemeyer,S, Aquila,A, Epp,SW, Erk,B, Foucar,L, Hartmann,R, Rudek,B, Rolles,D, Rudenko,A, Shoeman,RL, Andreasson,J, Bajt,S, Barthelmess,M, Barty,A, Bogan,MJ, Bostedt,C, Bozek,DJ, Caleman,C, Coffee,R, Coppola,N, DePonte,DP, Doak,RB, Ekeberg,T, Fleckenstein,H, Fromme,P, Gebhardt,M, Graafsma,H, Gumprecht,L, Hampton,CY, Hartmann,A, Hauser,G, Hirsemann,H, Holl,P, Holton,JM, Hunter,MS, Kabsch,W, Kimmel,N, Kirian,RA, Liang,M, Maia, F R N C , Meinhart,A, Marchesini,S, Martin, AV, Nass,K, Reich,C, Schulz,J, Seibert,M, Sierra,R, Soltau,H. Spence,JHC, Steinbrener,J, Stellato,F, Stern,S, Timneanu,N, Wang,X, Weidenspointner,G, Weierstall,U, White,TA, Wunderer,C, Chapman,HN, Ullrich,J, Strüder,L, and Schlichting,I (2011) **Physical Review B** (Vol.84, No.21), 84, 214111  
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- (108) Hunter MS, Fromme P. (2011) **Methods** 55: 387-404  
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*Proton Transport-Coupled ATP Synthesis Catalyzed by the Chloroplast ATPase*

## **Invited Lectures**

**2015**

**European XFEL User Meeting, DESY, Hamburg, Germany January 28-30, 2015**

*Structure and Dynamics of Photosystem II*

**2014**

**Ringberg Conference on Integrating spectroscopic and theoretical methods to analyse molecular machines, Schloss Ringberg, Kreuth, Germany, December 10-13, 2014**

*Time-resolved Femtosecond crystallography: towards molecular movies of biomolecules*

**Seminar at the Dept of Chemistry and Biochemistry, University of Chicago, November 19, 2014**

*Serial Femtosecond Crystallography opens a new era in Structural Biology*

**Spirit of Senses, ASU, Oct 23**

*The fascinating molecular world of Photosynthesis*

**Seminar at the FORTH Institute, Heraklion, Greece September 24, 2014**

*Femtosecond crystallography opens a new era in Structural Biology*

**15<sup>th</sup> International Conference for the Crystallization of Biological Macromolecules ICCBM15, Hamburg, Germany, September 15-19, 2014**

*Small is beautiful: How to grow nanocrystals for femtosecond crystallography*

**EMBO Workshop, Hamburg, Germany, September 12-14, 2014**

*Serial Femtosecond crystallography and Methods of Nanocrystal Growth and Characterization*

**Photosynthesis Gordon Research Conference, New Hampshire, USA, August 10-15, 2014**

*Time-resolved Femtosecond Nanocrystallography: Towards molecular Movies of important Processes in Bioenergy Conversion*

**Seminar at University of Queensland, Brisbane, Australia, August 5, 2014**

*Femtosecond crystallography opens new avenues for Structural Biology*

**2014 International Biophysics Congress, Engstrom Lecture, Brisbane Australia August 3-7, 2014**

*Femtosecond crystallography opens new avenues for Structural Biology*

**Symposium in honor of the 65<sup>th</sup> Birthday of Wolfgang Lubitz, Muelheim, Germany, July 23-25, 2014**

*Femtosecond crystallography opens a new era in Structural Biology*

**Workshop on Biomolecular Structure, Dynamics and Function: Membrane Proteins, Vanderbilt University, USA, May 2-4, 2014**

*Femtosecond Crystallography: A new Avenue for Structure Determination of Membrane Proteins*

**Beilstein Symposium, Prien, Germany, May 19-13, 2014**

*Femtosecond crystallography: dawn of a new Era in Structural Biology*

**Crystal 29, 29th Biennial Conference of the Society of Crystallographers in Australia and New Zealand, O'Reilly's Rainforest Retreat, Mt Lamington Plateau, Queensland, Australia, April 22-25, 2014**

*Femtosecond Crystallography: A new Avenue for Structure Determination of Membrane Proteins*

**Annual Meeting of the French Photosynthetic Society: Journées de la société française de Photosynthèse, Paris, France, April 14-15, 2014**

*Femtosecond crystallography of photosynthetic reaction centers*

**Dynamo symposium: Evolution, Biogenesis and Dynamics of Energy Transducing Membranes Paris, France, April 9-12, 2014**

*Time-resolved Femtosecond crystallography opens a new Era in Protein structure Determination*

**British Crystallographic Association Meeting, April 7-10, 2014**

*Femtosecond crystallography opens a new Era in Structural Biology*

**Keystone Symposium GPCRs and Frontiers in Structural Biology, March 31-April 4, 2014**

*Femtosecond Nanocrystallography of Membrane Proteins*

**Lorne Conference, Lorne, Australia, February 9-12, 2014**

*Femtosecond crystallography opens a new Era in Structural Biology Lorne conference on Protein Structure and Function*

**2013**

**Workshop of the Center for Ultrafast Imaging, DESY, Hamburg, Germany Nov 13, 2013**

*Time-resolved femtosecond nanocrystallography of photosynthetic membrane proteins opens a new era in Structural Biology*

**Workshop of the DFG Graduiertenkolleg, Halle , Germany November 6, 2013**

*Femtosecond crystallography of membrane proteins*

**Royal Society meeting on X-ray lasers in biology, London, UK October 14, 2013**

*Femtosecond nanocrystallography of membrane proteins opens a new era in Structural Biology*

**LSB Retreat, Durham, SC, USA September 13, 2013**

*Femtosecond crystallography opens a new Era in Structural Biology*

**Invited talk at Amgen, August 20, Santa Barbara, CA, USA 2013**

*Femtosecond crystallography opens a new Era in Structural Biology*

**16th International Photosynthesis Congress St. Louis, USA August 16, 2013**

*Time-resolved femtosecond nanocrystallography of Photosystem I and II*

**International Conference on Structural Genomics 2013-SLS, Sapporo, Japan,  
July 31, 2013**

*Femtosecond crystallography opens a new Era in Structural Biology*

**9th European Biophysics Conference, Lisbon, Portugal July 16, 2013**

*Femtosecond crystallography: the dawn of a new Era in Structural Biology*

**Time-resolved femtosecond nanocrystallography opens a new Era in Structural Biology**



**GRC conference on Bioenergetics, New Hampshire, USA June 25, 2013**

*Time-resolved femtosecond nanocrystallography opens a new Era in Structural Biology*

**Workshop on Applications of FELs in Structural Biology, MPI Heidelberg May 5, 2013**

*Towards time-resolved femtosecond crystallography of membrane proteins*

**STAIR Seminar University of Tennessee at Knoxville April 30, 2013**

*Femtosecond Nanocrystallography: Dawn of a new Era in Structural Biology”*

**Seminar Beckman Institute Urbana April 22, 2013**

*Femtosecond Nanocrystallography: Dawn of a new Era in Structural Biology”*

**Seminar U of Pennsylvania, Pittsburg April 4, 2013**

*Femtosecond s nanocrystallography of membrane proteins*

**Gordon Research Conference on drug efflux pumps, Ventura, CA, March17-21, 2013**

*New avenues for membrane protein structure determination including fs nanocrystallography*

**22th Western Photosynthesis Conference, Asilomar, CA, Jan 3-6, 2013**

*Time-resolved Femtosecond Nanocrystallography of Photosystem II and Photosystem I-ferredoxin*

**2012**

**NIH PSI: Biology Technology Workshop, Bethesda, December 12, 2012**

*Nanocrystals: New avenues in structural Biology*

**NIH ROADMAP workshop on Membrane Protein Structures and Complexes, CA**

**San Francisco November, 27-30 2012**

*Femtosecond nanocrystallography of membrane proteins*

**Pittsburg Diffraction Conference, SLAC, Stanford, CA, October 1-2, 2012**

*Femtosecond nanocrystallography of membrane proteins*

**European Bioenergetic conference, Freiburg, Germany, September 16-24, 2012**

*Femtosecond nanocrystallography of membrane proteins opens a new Era for Structural Biology: Towards molecular movies of Biomolecules*

**European Crystallographic conference, Bergen, Norway, August 5-10, 2012**

*Femtosecond nanocrystallography of membrane proteins opens New Era in Structural Biology*

**Gordon Research Conference on Photosynthesis, Davidson College, NC, July 8-13, 2012**

*Keynote talk: Time resolved Femtosecond nanocrystallography of photosynthetic membrane proteins*

**Seminar DESY, Hamburg, June 11, 2012**

*Femtosecond nanocrystallography of membrane proteins opens new avenues for Structural Biology*

**ERICE workshop: Present and future methods for Biological Crystallography, Erice, Italy, May 31-June 10, 2012**

*Femtosecond nanocrystallography of membrane proteins opens a new era for Structural Biology*

**Seminar at the Biozentrum Basel, Basel, May 29, 2012**

*Femtosecond nanocrystallography of membrane proteins opens a new era for Structural Biology*

**Seminar at the Max Planck Institute for Biophysics, Frankfurt, May 24, 2012**

*New avenues for structure determination of membrane proteins including femtosecond nanocrystallography*

**Biophysical Society Meeting, San Francisco, Feb 25-29, 2012**

*Femtosecond nanocrystallography of membrane proteins: toward molecular movies of biomolecules*

**Keystone meeting on High Throughput Methods in Structural Biology**

**Keystone, Jan 22-27, 2012**

*Femtosecond nanocrystallography opens new avenues for membrane protein structure determination*

**Gordon Research Conference on Ligand Recognition and Molecular Gating, Ventura, CA, Jan 15-20, 2012**

*Femtosecond nanocrystallography of membrane proteins: toward molecular movies of biomolecules at work*

**Western Photosynthesis Conference, Asilomar, CA, Jan 5-8, 2012**

*Time-resolved Femtosecond nanocrystallography of photosynthetic membrane proteins*

**2011**

**Seminar Texas Tech University, Lubbock, Sept 29, 2011**

*Femtosecond nano-crystallography of membrane proteins*

**Annual meeting of the American Crystallographic Association, New Orleans, June 2, 2011**

*Femtosecond nano-crystallography of membrane proteins*

**The Evolution of Photosynthesis and Oxygenation of the Earth Symposium, Sydney, Australia, June 27-29, 2011**

*Key steps in the evolution of a water oxidation complex*

**Energy Summit, Washington, DC, June 2011**

*Development of an artificial oxygen evolving complex*

**Seminar University of Virginia, May 16, 2011**

*Star-wars in Crystallography: Femtosecond nano-crystallography opens new avenues for structure determination of membrane proteins*

**Delaware Membrane Symposium Newark, May 4, 2011**

*Femtosecond nano-crystallography of membrane proteins*

**Ringberg Workshop of the Max Planck Society on Research with FELs, Ringberg, Germany, Feb 28, 2011**

*Femtosecond nanocrystallography of membrane proteins: Results, challenges and future directions*

**Seminar, National Institute of Health, Bethesda, Jan 28, 2011**

*Femtosecond nano-crystallography of membrane proteins*

**BIO-FEL workshop, Berkeley, CA, Jan 21, 2011**

*Femtosecond nanocrystallography of membrane proteins*

**Western Photosynthesis Conference, Asilomar, CA, Jan 7, 2011**

*Femtosecond nanocrystallography of photosynthetic membrane proteins opens new avenues for X-ray crystallography*

## **2010**

**Science at the edge seminar, Michigan State University, MI, October 22, 2010**

*Femtosecond nanocrystallography of membrane proteins*

**Nano-science seminar Arizona State University, Dept of Physics, September 20, 2010**

*Femtosecond nanocrystallography of membrane proteins*

**Seminar, University of Aarhus, Denmark, August 12, 2010**

*Femtosecond nanocrystallography, new avenues for structure determination of proteins*

**Annual Meeting of the center for Pumps and Kinases (PUMPKin), Denmark, August 10, 2010**

*Femtosecond nano-crystallography*

**Gordon Research Conference on Diffraction Methods in Structural Biology,  
Bates College, MA, USA, July 22, 2010**

*Femtosecond nanocrystallography: Opportunities for membrane protein analysis,  
Recent results from LCLS*

**ICCP 6 conference, New Mexico, USA, July 9, 2010**

*Porphyrins in Photosynthesis: Structure and function of photosynthetic membrane proteins*

**10th Cyanobacterial Molecular Biology Workshop, Lake Arrowhead, CA, June 15, 2010**

*Femtosecond nanocrystallography opens new avenues for structure determination of  
photosynthetic proteins*

**Cancer Membrane Symposium, Purdue University, May 8, 2010**

*Fundamentals of membrane protein Structural Biology*

**Biophysical Society Meeting, San Francisco, CA, USA, Feb. 22, 2010**

*Photosynthesis and solar energy conversion: Power for the future?*

**Biophysical Society Meeting, San Francisco, CA, USA, Feb. 22, 2010**

*A giant Photosystem I-IsiA supercomplex reveals adaptation of cyanobacteria to iron deficiency*

**Seminar, Washington State University, Pullman, Washington, USA, February 4, 2010**

*Journey into the micro-cosmos of photosynthesis*

## **2009**

**Seminar, Department of Chemistry University of Sydney, Sydney, Australia, May 8, 2009**

*Does the fascinating world of photosynthesis provide new strategies for solar energy  
conversion?*

**Seminar, Australian National University Canberra, Canberra, Australia, April 7, 2009**

*Does the fascinating world of photosynthesis provide new strategies for bioenergy production?*

**Seminar Department of Biology University of Sydney, Sydney, Australia, March 8, 2009**

*Journey into the micro-cosmos of photosynthesis*

**Western Photosynthesis Conference, Asilomar, CA, Jan 8-11**

*Structure of Photosystem I and supercomplexes with ferredoxin and antenna proteins provide  
new implications for bioenergy production*

## **2008**

**Western Photosynthesis Conference, Jan 3-6, Asilomar, CA, Jan 3-6, 2008**

*A Giant PSI-IsiA complex unravels adaptation of photosynthesis to oxidative stress*

**Biophysics Seminar, Department of Physics, Arizona State University, Tempe, AZ, USA,  
Jan 30, 2008**

*Structure determination of membrane proteins*

**12th International conference of crystallization of Biological macromolecules (ICCBM 12)  
Cancun, Mexico, May 6-10, 2008**

*Crystallization of photosynthetic membrane proteins*

**National Institute of Health, Seminar of the Membrane Protein Interest Group  
May 13, 2008, Bethesda, USA**

*Crystallization and structure of photosynthetic membrane proteins*

**Gordon Research Conference on Photosynthesis, South Hadley, USA, June 22-27, 2008**

*Structure and function of Photosystem I and its supercomplexes*

**European Bioenergetics Conference 2008 (EBEC 2008), Dublin, Ireland, July 20-25, 2008**

*Structure and function of photosynthetic membrane proteins*

**Rutgers University, Department of Chemistry, Departmental seminar, Nov 14, 2008**

*From sun-light to electron transfer: Structure and function of Photosystem I and II*

## **2007**

**TramP-6 colloquium on Membrane Protein Isolation, Crystallization and Structure  
Determination, Center for membrane pumps in Cells and Diseases, October 26, 2007  
Aarhus, Denmark**

*Membrane protein crystallography: Crystallization and structure determination of photosynthetic membrane proteins*

**Meeting of the British and Irish Crystallographic Societies, Bernal Symposium,  
September 4, 2007, Dublin, Ireland**

*Crystallization and structure determination of photosynthetic membrane proteins*

**Eastern Regional Photosynthesis Conference April 20, 2007, Woodshole, USA**

*Structure of photosynthetic membrane protein complexes: New findings and surprises*

**Annual Meeting of the Biophysical Society, March 3, 2007, Baltimore, USA**

*Crystallization and structure determination of integral membrane proteins from photosynthetic organisms*

**16th Western Photosynthesis Conference, Jan 2-5, 2007, Asilomar, USA**

*Structure and function of photosynthetic membrane proteins: Structural investigations of the PSI-ferredoxin and PSI-IsiA complex*

**Outreach talk:**

**St. Paul's Academy Career Day, January 24, 2007, Phoenix, AZ**

*From Biochemistry to the stars: A journey on photosynthesis into space and the microcosmos*

**2006**

**Symposium Membrane proteins: Crystallization and Structure Highlights, Nov 13, 2006, Oslo, Norway, EMBIO-lecture:**

*Crystallographic tour de force: Crystallization and structures of photosynthetic membrane proteins*

**International Conference on Porphyrins and Phthalocyanines ICCP-4, July 2-7, 2006, Rome, Italy**

*New insights into the structure and function of Photosystem I and II*

**10th Annual Meeting of the Swedish Structural Biology Network, June 16-19, 2006, Tallberg, Sweden**

*Structure and function of photosynthetic membrane proteins*

**3rd International Conference on Structure, Dynamics and Function of Proteins in Biological Membranes, May 14-19, 2006, Monte Verita, Switzerland**

*Structure and function of Photosystem I*

**Oxygen meeting of the Agouron Institute, April 6-10, 2006, Santa Fe, USA**

*Water oxidation in Photosystem II: unsolved questions based on the current status of X-ray crystallography and spectroscopy*

**University of Kentucky, Department of Chemistry and Biochemistry, Departmental seminar, March 24, 2006**

*From sun-light to electron transfer: Structure and function of Photosystem I and II*

**2005**

**Iowa State University Department of Biochemistry and Biophysics, Departmental seminar, December 15, 2005**

*From sun-light to electron transfer: Structure and function of Photosystem I and II*

**Workshop on Biological Membranes: Structure and Function" at The Ohio Center for Theoretical Science (OCTS), The Ohio State University, October 8-11, 2005, Ohio, USA**

*From light to electron transfer: New insights into the structure and function of Photosystem I"*

**GDCh-Jahrestagung 2005, September 11-14, 2005, Düsseldorf, Germany**

*Eine faszinierende Reise in die Welt der Photosynthese*

**30th FEBS Congress and 9th IUBMB Conference, The Protein World: Proteins and Peptides-Structure, Function and Organization, July 2-7, 2005, Budapest, Hungary**  
*Structure and function of Photosystem I and II*

Workshop on Crystallization: focus on optimization techniques, soluble and membrane proteins  
**NSLS Brookhaven, June 6-9 2005, Brookhaven, USA**  
*"Phase Diagrams: A Way for the rational design of membrane protein crystallization"*

**ESRF Conference Molecular Bioenergetics of Cyanobacteria, 21-26 May, 2005 Sant Feliu de Guíxols, Spain**  
*New insights into the structure and function of Photosystem I and II*

**First International Symposium on Chloroplast Bioengineering, May 2-7, University of Illinois UI, USA**  
*Molecular insights into the structure and function of photosystem I and II*

**Departmental seminar, March 24, 2005, The University of Alabama, Tuscaloosa, Alabama, USA**  
*From sun-light to electron transfer: Structure and function of Photosystem I and II*

**University of California Riverside, Seminar in Biochemistry and Molecular Biology, Riverside, CA, USA**  
*From sun-light to electron transfer: Structure and function of Photosystem I and II*

**Western Photosynthesis Conference, Asilomar, USA**  
*Overview of the current state of PS II crystallography and advances that may be expected during the next five years*

## **2004**

**13th International Congress of Photosynthesis, August 2004, Montreal, Canada**  
*Structure and function of Photosystem I and II*

**8th Cyanobacterial Molecular Biology Workshop, August 2004, Quebec, Canada**  
*Structure and function of Photosystem I and II*

**International Satellite Meeting "Photosynthesis and Post-Genomic era: From Biophysics to Molecular Biology, a Path in the Research of Photosystem II, August 2004, Trois-Rivieres, Canada**  
*Structure and function of Photosystem II*

**European Bioenergetics Conference, August 2004, Pisa, Italy**  
*Structure and function of Photosystem I and II*

**15th International Conference on Photochemical Conversion and Storage of Solar Energy,**

**July 2004, Paris, France**

*Structure and function of Photosystem I and II*

**Workshop on Crystallization of Membrane Proteins, NSLS User's Meeting, Brookhaven, May 2004, Brookhaven, USA**

*Overcoming the crystallization problems of Photosystem I and II*

**Annual Department of Energy Solar Photochemistry Research Conference, June 2004, Airline, USA**

*Structure and function of Photosystem I and II*

**Workshop on "Membranes, Membrane Proteins and Membrane Associated Molecular Machines, Howard Hughes Medical Institute Headquarters, May 2004, Chevy Chase, MA, USA**

*Crystallization of Photosystem I and II*

**Martin Kamen Memorial Lecture, University of California, San Diego, April 2004, San Diego, USA**

*From sunlight to electron transfer: structure and function of Photosystem I and II*

**48th Meeting of the Biophysical Society, February 2004, Baltimore, USA**

*Structure and function of Photosystem I and II*

## **2003**

**Nobel Symposium on "Membrane Proteins: Structure, Function and Assembly", August 2003, Stockholm, Sweden**

*Structure and function of Photosystem I and II*

**29th Midwestern Photosynthesis Meeting, October 2003, Turkey Run, Indiana, USA**

*Structure and function of Photosystem I and II*

**6th International Symposium of the Volkswagen Stiftung on Intra- and Intermolecular Electron Transfer, October 2003, Walberberg, Germany**

*Structure and function of Photosystem I and II*

**Workshop on "Neutron Macromolecular Crystallography at the SNS" October 2003, Argonne, IL, USA**

*Neutron diffraction on membrane proteins*

**Gordon Conference on Physical Aspects of Photosynthesis, June 2002, New Hampshire, USA**

*Structure of Photosystem II: from evolution to aspects of water oxidation*



**ESRF Workshop on Molecular Bioenergetics of Cyanobacteria, Mai 2003, Aquafredda, Italy**

*Structure and function of Photosystem I and II*

**Photosystem I Workshop, Mai 2003, Berlin, Germany**

*Photosystem I from Synechococcus elongatus: Implication of its structure for Type I RCs*

**Seminar at the Department of Biochemistry and Molecular Biophysics at the University of Arizona, April 2003, Tucson, USA**

*Structure and function of Photosystem I and II*

**Gordon Research Conference on „Metals in Biology“, February 2003, Ventura, California, USA**

*Structure and function of Photosystem I and II*

**Workshop on Membraneproteins, February 2003, Grenoble, France**

*Crystallization and structure of membrane proteins*

**EMBO Workshop on Molecular Genetics and Biophysical Aspects of Photosynthesis, January 2003, Les Diablets, Switzerland**

*Structure and function of Photosystem I and II*

**12<sup>th</sup> Western Photosynthetic Conference, January 2003, Pacific Grove, California**

*Structure and function of Photosystem I and II*

## **2002**

**Seminar at the Biology Department at Purdue University, 5.12.2002 Lafayette, Indiana, USA**

*Structure and function of Photosystem I and II*

**2<sup>nd</sup> Seminar at the Biology Department at Purdue University, 4.12.2002 Lafayette, Indiana, USA**

*Crystallization of membrane proteins*

**Seminar at the Chemistry Department of the University of UC Davis, 3.10.2002 California, USA**

*From sun light to electron transfer: Structure and function of Photosystem I and II*

**Biology Seminar at the University of Hamburg, 30.10.2002, Hamburg, Germany**

*From sun light to electron transfer: Structure and function of Photosystem I and II*

**Workshop on Expression and Structural Studies of Membrane Proteins, 28-29.10.2002 Gothenburg, Sweden**

Crystallization and structure determination of membrane proteins

**FEBS 2002 meeting, 20-25.10 2002, Istanbul, Turkey**

*Structure and function of Photosystem I and II*

**Seminar of Department of Chemistry, University of California, Davis, Sacramento, USA**

*From sun light to electron transfer: Structure and function of Photosystem I and II*

**Joint Symposium "German-American Frontiers of Chemistry" from the American Chemical Society, 23.-26.8. 2002, Durham NH, USA**

*Structure and function of Photosystem I and II*

**2002 International Meeting of the Protein Society, 17-21.8.2002, San Diego, USA**

*Crystallization and structure of Photosystem I at 2.5 Å resolution*

**Gordon Research Conference "Electron Donor-Acceptor Interactions", 11-16.8.2002 ,  
Salve Regina, Newport, USA**

*Electron transfer reactions in Photosystem I and II*

**XXXVth International Conference on Coordination Chemistry, 21-26.7.2002,  
Heidelberg, Germany**

*Structure and function of Photosystem I and II*

**Lecture at the Max Planck Institute of Biophysical Chemistry, Göttingen, Germany**

*Crystallization, structure and function of Photosystem I and II*

**Biochemistry-Seminar at the University of Minnesota, 8.5. 2002, Minnesota, USA**

*Structure and function of Photosystem I and II*

**Symposium "Membrane Proteins: Experimental and Computational Approaches to  
Understanding Cellular Function", University of Illinois, 4-5.5.2002, Illinois, USA**

*Structure and function of Photosystem I and II*

**"EMBO Workshop on Green and Heliobacteria; Molecular Biology, Structure and  
Function", 19-24.4. 2002, Passau, Germany**

*Structure of Photosystem I and II: Implications for the structure of the Photosystems of Green  
Bacteria and the evolution of photosynthetic reaction centers*

**Symposium "ISS meets Industry" Industrial Exhibition Hannover Messe, 19.4.2002  
Hanover, Germany**

*"ISS and Biotechnology: Crystallization of membrane proteins under microgravity"*

**Royal Society Discussion Meeting 'Photosystem II – molecular structure and function'  
13-14.3. 2002, London, UK**

*Implications on the function of Photosystem II based on the X-ray structural model*

**3. Kinetik Seminar der Deutschen Gesellschaft für Kristallzüchtung am Max-Planck-Institut für Physik komplexer Systeme, 14.-15.2. 2002, Dresden, Germany**  
*Kristallisation von Membranproteinen unter Mikrogravitation*

**Seminar of the 'Sonderforschungsbereich' at the Ludwig-Maximilians-Universität München, 22.01.2002 Munich, Germany.**  
*Structure and function of Photosystem I and II*

**Seminar of the Basel Chemical Society, 8.1.2002 Basel, Switzerland**  
*Crystallization and structure of Photosystem I and II*

## **2001**

**Lecture at the University College London, 18.12.2001 London, England**  
*Structure of Photosystem I at 2.5 Å resolution*

**Meeting of the British Crystallographic Association, 17.12.2001 London, England**  
*Crystallization and structure of Photosystem I and II*

**Lecture at the Akademie der Wissenschaften zu Göttingen, Ceremony of the 250th anniversary of the Akademie der Wissenschaften zu Göttingen, presentation of the "Biologie 2001" Award, 16.11.2001, Göttingen, Germany**  
*Leben durch Licht: Struktur und Funktion der Photosysteme I und II*

**Rundgespräch der Deutschen Forschungsgemeinschaft "Spektroskopie an Photorezeptoren", 22.-24.10.2001, Schloss Ringberg Tegernsee, Germany**  
*Structure and function of Photosystem I and II*

**Mauloff Conferences 2001 of the Sfb Molecular Bioenergetics, 26.-29.9.2001, Mauloff, Germany**  
*Structures of Photosystem I and II*

**Lecture at the University of Brisbane, 13.9.2001, Brisbane, Australia**  
*From sun light to electron transfer: Structure and function of Photosystem I and II*

**Lecture at the University of Sydney, 11.9.2001, Sydney, Australia**  
*From sun light to electron transfer: Structure and function of Photosystem I and II*

**Annual Meeting of the Australian Biophysics Society, 4.-7.9.2001, Katoomba, Australia**  
*From sun light to electron transfer: Structure and function of Photosystem I and II*

**Biological Colloquium at the University of Wollongong, 30.8.2001, Canberra, Australia**  
*From sun light to electron transfer: Structure and function of Photosystem I and II*

**Lecture at the Australian Academy of Science, Australian National University, 30.8.2001, Canberra, Australia**

*From sun light to electron transfer: Structure and function of Photosystem I and II*

**Satellite Meeting of the 12th International Photosynthesis Congress "Evolution of Photosynthesis", 29.-29.8.2001, Heron Island, Australia**

*Evolution of photosynthetic reaction centers*

**4th International Conference on Biological Physics, 30.7.-3.8.2001, Kyoto, Japan**

*Structure of Photosystem I and II*

**ICBP Satellite Meeting "Physical Aspects of Photobiological Processes: Photobiology and Energy Conversion, 27.- 28.7.2001, Nagoya, Japan**

*Crystallization and structure of Photosystem I and II*

**Advances Biophysics School on Lipid-Protein Interactions and the Organization of Membranes, 23.6.-3.7.2001, Szeged, Hungary**

*Structure and function of photosystem II and photosystem I reaction centers*

**Gordon Research Conference on Bioenergetics, 16.-22.6.2001, Meriden, NH, USA**

*Structure and function of Photosystem I*

**Euresco Conference "Molecular Bioenergetics of Cyanobacteria", 25.-30.5.2001, Obernai, France**

*Structure and function of Photosystem I and II*

**Frühjahrstagung der Deutschen Industrie zur Nutzung der Internationalen Raumstation, 15.2.2001, Berlin, Germany**

*Kristallisation von Membranproteinen unter Mikrogravitation*

**Symposium Photosynthetic Excitons, 22.3.2001, Amsterdam, The Netherlands**

*Structure of Photosystem I and II*

## **2000**

**Jacques Monod Conference on Photosynthesis, 18-22.11.2000, Roscoff, France**

*Structure of Photosystem I at 2.5 Å resolution*

**5th Nordic Conference on Photosynthesis, 26-28.10.2000, Elsinore, Sweden**

*From sun light to electron transfer: structure and function of Photosystem I and II*

**11th European Bioenergetics Conference, 9-14.9.2000, Brighton, UK**

*Structure and function of Photosystem I*

**13th International Congress on Photobiology and 28th Annual Meeting American Society for Photobiology, 1.-6.7.2000, San Francisco, USA**

*Structure and function of photosynthetic membrane proteins*

**Colloquium of the Institute for Physical and Theoretical Chemistry, TU-München, 17.2.2000, München, Germany**

*Structure and function of Photosystem I*

**Lecture at the Max-Planck-Institut für Strahlenchemie, 18.1.2000, Mühlheim, Germany**

*Strukturbiologie von Membranproteinen*

**1999**

**Lecture at the Max-Planck Institut für Kolloid- und Grenzflächenforschung (1999) Golm, Germany**

*Strukturbiologie von Membranproteinen*

**Impulstagung: Optionen für die Zukunft - Die industrielle Nutzung der Internationalen Raumstation für Biotechnologie und Medizin (1999), Industrie- und Handelskammer zu Köln, Germany**

*Kristallisation von Membranproteinen unter Mikrogravitation*

**37<sup>th</sup> IUPAC Congress and 27<sup>th</sup> GDCh General Meeting (1999), Berlin, Germany**

*Crystallization and structural model of Photosystem I*

**European Research Conference on Molecular Bioenergetics of Cyanobacteria (1999) Gmunden, Austria**

*Crystallization and structural model of Photosystem I*

**Frontiers of science, 3<sup>th</sup> Joint venture Symposium of the Hebrew University and the TU-Berlin (1999), Jerusalem, Israel**

*Structure and function of the large membrane-protein-complex Photosystem I*

**1998**

**Graduiertenkolleg "ungepaarte Elektronen" der Albert-Ludwigs-Universität Freiburg (1998)**

*Struktur und Funktion des Photosystems I*

**XIth Congress on Photosynthesis (1998), Budapest, Hungary**

*Crystallization and structural model of Photosystem I*

**Gordon Conference on the Chemistry and Biology of Tetrapyroles (1998),  
Newport RI, USA**

*Crystallization and structural model of Photosystem I*

**10th European Bioenergetics Conference (1998), Göteborg, Sweden**

*Crystallization and structural model of Photosystem I*

**Colloquium des Organischen Institutes der Universität Hamburg (1998)**

*Kristallisation und Strukturmodell des Photosystems I*

**2nd Hamburg Workshop on Liquid Crystals and Functional Materials (1998), Hamburg**

*Crystallization and structural model of the large membrane protein Photosystem I*

**Botanisches Colloquium der Universität Leipzig (1998)**

*Struktur und Funktion des Photosystems I*

## **1997**

**First International Conference on Material and Life Sciences (1997), Harima, Japan**

*Crystallization and structural model of Photosystem I*

**7th Congress of the European Society for Photobiology (1997), Stresa, Italy**

*Crystallization and structural model of Photosystem I at 4 Å resolution*

**Gordon Conference on Biophysical Aspects of Photosynthesis (1997), New Hampton,  
USA**

*Crystallization and structural model of Photosystem I*

**ESRF Summer School on Biophysics of Photosynthesis (1997), London, UK**

*Three-dimensional crystallization and X-ray structure analysis: general aspects  
and crystallization and structural model of PS I derived from X-ray structure analysis at 4 Å  
resolution*

**European Research Conference on Tetrapyrole Photoreceptors in Photosynthetic  
Organisms (1997), Kork, Ireland**

*Crystallization and structural model of Photosystem I*

## **1996**

**3th Nordic Congress on Photosynthesis (1996), Stockholm, Sweden**

*Crystallization and structure of Photosystem I at 4 Å resolution*

**Botanikertagung (1996), Düsseldorf, Germany**

*Crystallization and structure of Photosystem I*

**9th European Bioenergetic Conference (1996), Lovain-la-Neuve, Belgium**

*Photosystem I at 4 Å resolution - structural and evolutionary aspects*

**CNRS Conference Jacques Monod" Synthesis and Function of Photosynthetic Complexes" (1996), Aussois, France**

*Crystallization and structure of Photosystem I*

## **1995**

**Karolinska Summer School: "Understanding Membrane Proteins" (1995), Stockholm, Sweden**

*Photosystem I*

**NVBMB (Dutch Society for Biochemistry and Molecular Biology) Meeting on "Membrane Proteins: from Sequence to structure" (1995), Groningen, The Netherlands**

*Crystallization and structure of Photosystem I at 4,5 Å resolution*

**Beckman Symposium on Protein Interaction (1995), Illinois, USA**

*Structure of Photosystem I at 4,5 Å resolution*

## **1994**

**8th European Bioenergetics Conference EBEC (1994), Valencia, Spain**

*Structure of Photosystem I: Suggestions on the docking sites for Plastocyanin, Ferredoxin and the coordination of P700*

**FEBS Special Meeting on Biological Membranes (1994), Helsinki, Finland**

*Crystallization and structure of Photosystem*

**4th International Congress of Plant Molecular Biology (1994), Amsterdam, The Netherlands**

*Crystallization and structure of Photosystem I*

**8. Arbeitstagung Photosynthese (1994), Egsdorf, Germany**

*Crystallization and structure of Photosystem I*

**Deutsch-Schwedisches Symposium on "Structure and Function of Photosynthetic Reaction Centers" (1994), Freiburg, Germany**

*Crystallization and structure of Photosystem I at 6 Å resolution*

**38th Meeting of the American Biophysical Society (1994), New Orleans, USA**

*Crystals and structure of Photosystem I*

**1993**

**Gordon Research Conference "Biochemical Aspects. of Photosynthesis" (1993),  
New Hampton, USA**

*Crystallization and structure of Photosystem I at 6 Å resolution*

**Universität Stuttgart: Vortrag am Biologischen Institut (1993)**

*Struktur und funktion des Photosystems I*

**Jacques-Monod Conference on "Protein-protein interactions in the photosynthetic  
apparatus" (1993), Aussois, France**

*Crystallization and structure of Photosystem I at 6 Å resolution*

**1992**

**Johannes Gutenberg-Universität Mainz: Lecture at the Biochemical Colloquium, Institut  
für Biochemie am Fachbereich Chemie und Pharmazie (1992)**

*Struktur und Funktion des Photosystems I*

**7th European Bioenergetics Conference EBEC (1992), Helsinki, Finland**

*Crystallization and structure of Photosystem I at 6 Å resolution*

## **Research Grants**

***Current in 2014***

***NSF Science Technology Center: Biology with Free Electron Lasers***

\$ 25,000,000 11/1/2013 to 10/31/2018

Ed Lattman (PI) , Hauptman Woodman Institute Buffalo, J Spence, P Fromme, R Stroud, R Kornberg et al. (co-Pis)

***EFR Center for Bio-Inspired Solar Fuel Production***

DOE-U.S. Department of Energy 09032731

\$14,754,000 4/1/2009 to 3/31/2014

PI: D. Gust, co-Pi and member of subtask 2, artificial oxygen evolving complex Petra Fromme

***Center for Membrane Proteins in Infectious Diseases,***



NHS-NIH- NIGMS (grant no. 0036032) PSI:Biology  
\$7,700,000  
7/1/2010-6/30/2015  
PI: Petra Fromme

***Dynamics of electron transfer-PSI/ferredoxin***

NSF-BBS-DMB  
\$591,010  
6/1/2010-5/31/2014  
PI: Spence, John HC (co-PI: Petra Fromme)

***Femtosecond nano-crystallography of membrane proteins***

HHS-NIH ROADMAP 1R01GM095583-01  
\$ 938,000  
9/1/2010-8/30/2015  
PI: Petra Fromme

***Acquisition of a SONICC instrument for characterization of nanocrystals***

supplementary grant to HHS-NIH ROADMAP 1R01GM095583  
\$ 238, 000  
9/1/2011  
PI: Petra Fromme

**Completed**

***Fluctuation X-ray diffraction of membrane proteins in solution***

DOE Department of Energy 09083939  
\$ 80 000 subcontract from University of Wisconsin- Milwaukee  
10/1/2009 to 9/30/2012  
PI: D. K. Saldin, co-PI ASU: Petra Fromme

***Structure and function of the proton-turbine of the ATP-synthase***

NIH R01 GM081490-01  
\$ 960,968, 09/01/2007 to 08/31/2013  
PI: Petra Fromme

**2004-2011 (PI), NSF MCB 04127142**

*Structure and function of supercomplexes of Photosystem I with its peripheral antenna systems in green algae and cyanobacteria*

**2004-2010 (PI) (R01GM071619) NIH, National Institute of Health**

*The mechanism of water splitting in PS II investigated by X-ray crystallography and spectroscopy*

**2005 (co-PI), NSF, National Science Foundation**

*Purchase of an Instrument for Ultrafast, Multidimensional Fluorescence Detection and Imaging*

**2003-2006 (PI), USDA**, United States Department of Agriculture

*Interaction of Photosystem I with its natural electron acceptor ferredoxin: a model system for protein recognition and inter-protein electron transfer*

**2000-2003 (PI), DLR**, German Space Agency

*New developments for crystallization of photosynthetic membrane proteins under microgravity*

**1999-2002 (PI), DFG**, German Science Foundation, special research unit 498

*Crystallization of the water-oxidizing Photosystem II for structural and functional analysis of the system*

**1999-2002 (PI), DFG**, German Science Foundation, special research unit 498

*Structure and function of Photosystem I*

**1999-2003 (PI), DFG**, German Science Foundation, priority program 1070

*Crystallization of the ATP-Synthase ( $F_0F_1$ ) from the thermophilic Cyanobacterium *Synechococcus elongatus**

**1999-2003 (PI), ESA**, European Space Agency

*Advanced diagnostics and operation concepts for crystal growth of bio-molecules*

**1998-2000 (Co-PI), DLR** Deutsches Zentrum fuer Luft und Raumfahrt, German Space Agency

*Crystallization of Photosystem I under microgravity*

**1998-2002 (PI), DFG**, German Science Foundation

*Crystallization of a new type of pore-proteins of the Outer-Chloroplast- Membrane*

**1995-1999 (PI), DFG**, German Science Foundation, special research unit 312

*Structure and function of Photosystem I and II*

**1990-1984 (Co-PI), DFG** German Science Foundation, special research unit 312

*Structure and function of Photosystem I and II*