CURRICULUM VITAE

Raimund Fromme

ADDRESS AND PHONE NUMBER:
School of Molecular Sciences
Former Department of Chemistry and Biochemistry
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Education

Ph.D. in Chemistry, 1994 Technical University of Berlin

Ph.D. Thesis: *Investigations on structure and function of system II of photosynthesis from higher plants and algae (Untersuchungen zur Struktur und Funktion des Photosystems II der Photosynthese aus Höheren Pflanzen und Algen),*

Prof. Gernot Renger, Advisor

B.S. (Physikum) Medicine from Free University of Berlin 1989

M.S. Biochemistry(Diplom) *Characterization of Herbicide Binding niche at the Acceptor Side of Photosystem II* Free University of Berlin, 1987

B.S. Biochemistry, Free University Berlin, 1985

Citizenship of Germany and USA

Professional Experience:

2014/ 08-present	Associate Research Professor School of Molecular Sciences Biodesign Institute at Arizona State University (ASU) Center of Applied Structural Discovery (CASD)
2019 /09 – 2022/08	Co- PI with Kevin Redding(ASU) and John Golbeck(PennState)
2016 / 09 – 2019/ 08	Co- PI with Kevin Redding(ASU) and John Golbeck(PennState)
2013 / 09 – 2016/ 08	Co- PI with Kevin Redding(ASU) and John Golbeck(PennState) DoE grant on *Heliobacterium modesticaldum*
2009 01-06	International Visiting Research Fellow, University of Sydney, Australia
2006-2014	Assistant Research Professional for X-ray facility (Protein), Department of Chemistry and Biochemistry, ASU
2004-2014	Faculty Research Associate Department of Chemistry and Biochemistry, ASU
2002 -2004	Research Associate at ASU School of Life Sciences
2000 -2002	Financial planning and capital administrator free lance
1997-1999	Financial planning AWD Company
1990-1995	Co-PI and Research Scientist in a project funded by German Government (Biological Hydrogen evolution), Prof. Renger, PI
1988-1989	Graduate Scholarship from Berlin Government (NaföG)
1984-1987	Research Assistant Technical University, Prof. Renger, Supervisor

Research Interest: Raimund Fromme

Areas of Study

X-ray Crystallography+++ Light Harvesting +++ Electron transfer+++
F-Type ATPase+++Sugar binding proteins+++ Photosynthesis +++
Free Electron Laser in Biology

Background The inner sanctum of Photosynthesis the structure and function of Photosystem I and II is since my master thesis and Ph.D. the focus of my research interest. Since fifteen years I have the opportunity to work on crystal structures of various proteins in the broad field of photosynthesis. The membrane proteins are the most interesting and challenging proteins at all. Currently the Protein Data Bank(PDB) has above 200,000 structures, in contrast the number of known membrane protein structures is still around 850 unique. Therefore the most important proteins are in their majority still unknown by their structure, beside the fact that the numeric share is at least one third of all proteins. The field of membrane protein structure determination is still in the beginning with a clear growing impact to many research topics in chemistry, biochemistry, biology and medicine.

As protein crystallographer I have contributed to 79 structures in the Protein Data Bank many of them are membrane protein structures. In 2017 I was the corresponding author for the first structure of a heliobacterial photosystem(Science).

Diffraction with the X-ray femtosecond Free Electron Laser(FEL) is the newest tool in structural biology to provide information about the dynamic change of structures like photosystem II or the photoactive yellow protein(PYP).

In this new emerging research field I have co-authored to the following top tier papers 5 in Science, 4 in Nature, 3 Nature Communications, 1 Nature Methods , 3 in PNAS, 2 Structure, 1 Acta Crystallographica A and second tier papers in Optics Express(1) and IUCrJ(3) and Phil Trans R Soc Lond B in the last 7 years.

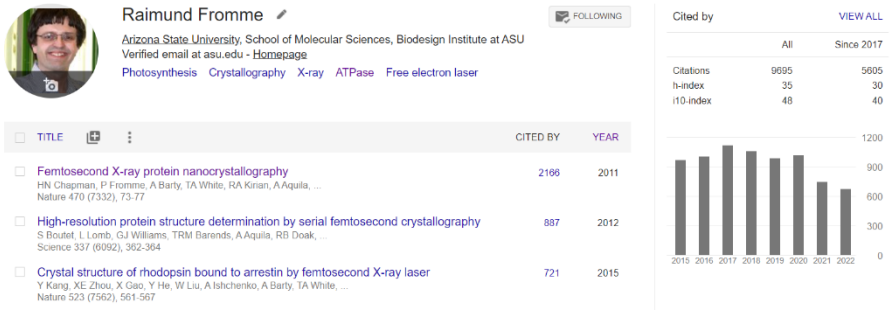
I have co-authored 5 book chapters about photosynthesis and Free electron laser as for one I was the only author.

Reviewing activities

For scientific journals: FEBS Letters, Science Advances, PNAS, Photosynthesis Research, Journal of Physical Chemistry

My home page can be found here https://raimundfromme.com

Publications:



http://scholar.google.com/citations?user=dJmDDssAAAAJ&hl=en

- Articles in mostly peer-reviewed Journals

And Bookchapters*

71.DETECTION OF A GEMINATE PHOTOPRODUCT OF BOVINE CYTOCHROME C OXIDASE BY TIME-RESOLVED SERIAL FEMTOSECOND CRYSTALLOGRAPHY

Izumi Ishigami, Sergio Carbajo, Nadia Zatsepin, Masahide Hikita, Chelsie E Conrad, Garrett Nelson, Jesse Coe, Shibom Basu, Thomas Grant, Matthew H Seaberg, Raymond G Sierra, Mark S Hunter, Petra Fromme, **Raimund Fromme**, Denis L Rousseau, Syun-Ru Yeh
J. Am. Chem. Soc. 2023, https://doi.org/10.1021/jacs.3c07803

70.Modular droplet injector for sample conservation providing new structural insight for the conformational heterogeneity in the disease-associated NQO1 enzyme
Diandra Doppler, Mukul Sonker, Ana Egatz-Gomez, Alice Grieco, Sahba Zaare, Rebecca Jernigan, Jose Domingo Meza-Aguilar, Mohammad T Rabbani, Abhik Manna, Roberto C Alvarez, Konstantinos Karpos, Jorvani Cruz Villarreal, Garrett Nelson, Jay-How Yang, Jackson Carrion, Katherine Morin, Gihan K Ketawala, Angel L Pey, Miguel Angel Ruiz-Fresneda, Juan Luis Pacheco-Garcia, Juan A Hermoso, Reza Nazari, Raymond Sierra, Mark S Hunter, Alexander Batyuk, Christopher J Kupitz, Robert E Sublett, Stella Lisova, Valerio Mariani, Sébastien Boutet, Raimund Fromme, Thomas D Grant, Sabine Botha, Petra Fromme, Richard A Kirian, Jose Manuel Martin-Garcia, Alexandra Ros

Lab on a Chip 2023, 23,13,3016-3033, https://doi.org/10.1039/D3LC00176H

69. **Physachenolide C is a Potent, Selective BET Inhibitor**

Christopher J Zerio, Jared Sivinski, EM Kithsiri Wijeratne, Ya-Ming Xu, Duc T Ngo, Andrew J Ambrose, Luis Villa-Celis, Niloofar Ghadirian, Michael W Clarkson, Donna D Zhang, Nancy C Horton, AA Leslie Gunatilaka, **Raimund Fromme**, Eli Chapman

Journal of Medicinal Chemistry, 2023,66,1, 913-933

https://doi.org/10.1021/acs.jmedchem.2c01770

68. Room-temperature structural studies of SARS-CoV-2 protein NendoU with an X-ray free-electron laser

Rebecca J Jernigan, Dhenugen Logeswaran, Diandra Doppler, Nirupa Nagaratnam, Mukul Sonker, Jay-How Yang, Gihan Ketawala, Jose M Martin-Garcia, Megan L Shelby, Thomas D Grant, Valerio Mariani, Alexandra Tolstikova, Michelle Z Sheikh, Mimi Cho Yung, Matthew A Coleman, Sahba Zaare, Emily K Kaschner, Mohammad Towshif Rabbani, Reza Nazari, Michele A Zacks, Brandon Hayes, Raymond G Sierra, Mark S Hunter, Stella Lisova, Alexander Batyuk, Christopher Kupitz, Sebastien Boutet, Debra T Hansen, Richard A Kirian, Marius Schmidt, **Raimund Fromme**, Matthias Frank, Alexandra Ros, Julian J-L Chen, Sabine Botha, Petra Fromme
Structure 10.January 2023 https://doi.org/10.1016/j.str.2022.12.009

67. **Design of novel cyanovirin-N variants by modulation of binding dynamics through distal mutations**
I Can Kazan, Prerna Sharma, Mohammad Imtiazur Rahman, Andrey Bobkov, **Raimund Fromme**, Giovanna Ghirlanda , S Banu Ozkan

eLife 2022, 11:e67474. DOI: https://doi.org/10.7554/eLife.67474

66. **Electrically stimulated droplet injector for reduced sample consumption in serial crystallography**
Mukul Sonker, Diandra Doppler, Ana Egatz-Gomez, Sahba Zaare, Mohammad T Rabbani, Abhik Manna, Jorvani Cruz Villarreal, Garrett Nelson, Gihan K Ketawala, Konstantinos Karpos, Roberto C Alvarez, Reza Nazari, Darren Thifault, Rebecca Jernigan, Dominik Oberthür, Huijong Han, Raymond Sierra, Mark S Hunter, Alexander Batyuk, Christopher J Kupitz, Robert E Sublett, Frederic Poitevin, Stella Lisova, Valerio Mariani, Alexandra Tolstikova, Sebastien Boutet, Marc Messerschmidt, J Domingo Meza-Aguilar, **Raimund Fromme**, Jose M Martin-Garcia, Sabine Botha, Petra Fromme, Thomas D Grant, Richard A Kirian, Alexandra Ros
Biophysical Reports(2022)Vol 2/4, 100081, https://doi.org/10.1016/j.bpr.2022.100081

65. **Structural and biophysical properties of FopA, a major outer membrane protein of Francisella tularensis**

Nirupa Nagaratnam, Jose M Martin-Garcia, Jay-How Yang, Matthew R Goode, Gihan Ketawala, Felicia M Craciunescu, James D Zook, Manashi Sonowal, Dewight Williams, Thomas D Grant, **Raimund Fromme**, Debra T Hansen, Petra Fromme

PloS one(2022) Vol 17/8, e0267370, https://doi.org/10.1371/journal.pone.0267370

64.**Co-flow injection for serial crystallography at X-ray free-electron lasers**

Diandra Doppler, Mohammad T. Rabbani, Romain Letrun, Jorvani Cruz Villarreal,Dai Hyun Kim, Sahir Gandhi, Ana Egatz-Gomez,Mukul Sonker, Joe Chen, Faisal H. M. Koua, Jayhow Yang, Mohamed Youssef, Victoria Mazalova, Sasˇa Bajt, Megan L. Shelby, Matt A. Coleman, Max O. Wiedorn, Juraj Knoska, Silvan Schon, Tokushi Sato, Mark S. Hunter, Ahmad Hosseinizadeh, Christopher Kuptiz, Reza Nazari,Roberto C. Alvarez, Konstantinos Karpos, Sahba Zaare, Zachary Dobson, Erin Discianno,Shangji Zhang, James D. Zook, Johan Bielecki, Raphael de Wijn, Adam R. Round, Patrik Vagovic, Marco Kloos, Mohammad Vakili, Gihan K. Ketawala, Natasha E. Stander Tien L. Olson, Katherine Morin, Jyotirmory Mondal, Jonathan Nguyen, Jose Domingo Meza-Aguilar, Gerdenis Kodis, Sara Vaiana, Jose M. MartinGarcia, Valerio Mariani, Peter Schwander, Marius Schmidt, Marc Messerschmidt, Abbas Ourmazd, Nadia Zatsepin, Uwe Weierstall, Barry D. Bruce, Adrian P. Mancuso, Thomas Grant, Anton Barty, Henry N. Chapman, Matthias Frank**, Raimund Fromme**, John C. H. Spence, Sabine Botha, Petra Fromme, Richard A. Kirian and Alexandra Ros
J. Appl. Cryst. (2022). 55, 1–13 https://doi.org/10.1107/S1600576721011079 1

63. **Segmented flow generator for serial crystallography at the European X-ray free electron laser**

Austin Echelmeier, Jorvani Cruz Villarreal, Marc Messerschmidt, Daihyun Kim, Jesse D. Coe, Darren Thifault, Sabine Botha, Ana Egatz-Gomez, Sahir Gandhi, Gerrit Brehm, Chelsie E. Conrad, Debra T. Hansen, Caleb Madsen, Saša Bajt, J. Domingo Meza-Aguilar, Dominik Oberthür, Max O. Wiedorn, Holger Fleckenstein, Derek Mendez, Juraj Knoška, Jose M. Martin-Garcia, Hao Hu, Stella Lisova, Aschkan Allahgholi, Yaroslav Gevorkov, Kartik Ayyer, Steve Aplin, Helen Mary Ginn, Heinz Graafsma, Andrew J. Morgan, Dominic Greiffenberg, Alexander Klujev, Torsten Laurus, Jennifer Poehlsen, Ulrich Trunk, Davide Mezza, Bernd Schmidt, Manuela Kuhn, **Raimund Fromme**, Jolanta Sztuk-Dambietz, Natascha Raab, Steffen Hauf, Alessandro Silenzi, Thomas Michelat, Chen Xu, Cyril Danilevski, Andrea Parenti, Leonce Mekinda, Britta Weinhausen, Grant Mills, Patrik Vagovic, Yoonhee Kim, Henry Kirkwood, Richard Bean, Johan Bielecki, Stephan Stern, Klaus Giewekemeyer, Adam R. Round, Joachim Schulz, Katerina Dörner, Thomas D. Grant, Valerio Mariani, Anton Barty, Adrian P. Mancuso, Uwe Weierstall, John C. H. Spence, Henry N. Chapman, Nadia Zatsepin, Petra Fromme, Richard A. Kirian & Alexandra Ros
Nature communications11, Article number: 4511 (2020)
https://www.nature.com/articles/s41467-020-18156-7

*62. **Application of Hard-X-Ray Free-Electron Lasers for Static and Dynamic Processes in Structural Biology**

Shibom Basu , Petra Fromme and **Raimund Fromme**
Book Editor(s): Jean-Paul Renaud First published:02 January 2020

https://doi.org/10.1002/9781118681121.ch27

61. **In cellulo crystallization of Trypanosoma brucei IMP dehydrogenase enables the identification of genuine co-factors**

Karol Nass, Lars Redecke, Markus Perbandt, O Yefanov, M Klinge, R Koopmann, F Stellato, A Gabdulkhakov, R Schönherr, D Rehders, JM Lahey-Rudolph, A Aquila, A Barty, S Basu, RB Doak, R Duden, M Frank, **R Fromme**, Stephan Kassemeyer, G Katona, R Kirian, H Liu, I Majoul, JM Martin-Garcia, M Messerschmidt, Robert L Shoeman, U Weierstall, S Westenhoff, TA White, GJ Williams, CH Yoon, N Zatsepin, P Fromme, M Duszenko, HN Chapman, C Betzel

Nature communications 11 (1), 1-13 (2020)
https://www.nature.com/articles/s41467-020-14484-w

60. **Time-resolved serial femtosecond crystallography at the European XFEL**

Suraj Pandey, Richard Bean, Tokushi Sato, Ishwor Poudyal, Johan Bielecki, Jorvani Cruz Villarreal, Oleksandr Yefanov, Valerio Mariani, Thomas A White, Christopher Kupitz, Mark Hunter, Mohamed H Abdellatif, Saša Bajt, Valerii Bondar, Austin Echelmeier, Diandra Doppler, Moritz Emons, Matthias Frank, **Raimund Fromme**, Yaroslav Gevorkov, Gabriele Giovanetti, Man Jiang, Daihyun Kim, Yoonhee Kim, Henry Kirkwood, Anna Klimovskaia, Juraj Knoska, Faisal HM Koua, Romain Letrun, Stella Lisova, Luis Maia, Victoria Mazalova, Domingo Meza, Thomas Michelat, Abbas Ourmazd, Guido Palmer, Marco Ramilli, Robin Schubert, Peter Schwander, Alessandro Silenzi, Jolanta Sztuk-Dambietz, Alexandra Tolstikova, Henry N Chapman, Alexandra Ros, Anton Barty, Petra Fromme, Aan P Mancuso, Marius Schmidt

Nature Methods, November 18 (2019), https://doi.org/10.1038/s41592-019-0628-z

59**. Membrane protein megahertz crystallography at the European XFEL**

Chris Gisriel, Jesse Coe, Romain Letrun, Oleksandr M Yefanov, Cesar Luna-Chavez, Natasha E Stander, Stella Lisova, Valerio Mariani, Manuela Kuhn, Steve Aplin, Thomas D Grant, Katerina Dörner, Tokushi Sato, Austin Echelmeier, Jorvani Cruz Villarreal, Mark S Hunter, Max O Wiedorn, Juraj Knoska, Victoria Mazalova, Shatabdi Roy-Chowdhury, Jay-How Yang, Alex Jones, Richard Bean, Johan Bielecki, Yoonhee Kim, Grant Mills, Britta Weinhausen, Jose D Meza, Nasser Al-Qudami, Saša Bajt, Gerrit Brehm, Sabine Botha, Djelloul Boukhelef, Sandor Brockhauser, Barry D Bruce, Matthew A Coleman, Cyril Danilevski, Erin Discianno, Zachary Dobson, Hans Fangohr, Jose M Martin-Garcia, Yaroslav Gevorkov, Steffen Hauf, Ahmad Hosseinizadeh, Friederike Januschek, Gihan K Ketawala, Christopher Kupitz, Luis Maia, Maurizio Manetti, Marc Messerschmidt, Thomas Michelat, Jyotirmoy Mondal, Abbas Ourmazd, Gianpietro Previtali, Iosifina Sarrou, Silvan Schön, Peter Schwander, Megan L Shelby, Alessandro Silenzi, Jolanta Sztuk-Dambietz, Janusz Szuba, Monica Turcato, Thomas A White, Krzysztof Wrona, Chen Xu, Mohamed H Abdellatif, James D Zook, John CH Spence, Henry N Chapman, Anton Barty, Richard A Kirian, Matthias Frank, Alexandra Ros, Marius Schmidt, **Raimund Fromme**, Adrian P Mancuso, Petra Fromme, Nadia A Zatsepin

Nature communications, Nov 4 2019, 10,1,1-11
https://www.nature.com/articles/s41467-019-12955-3

58. **Snapshot of an oxygen intermediate in the catalytic reaction of cytochrome c oxidase**

Izumi Ishigami, Ariel Lewis-Ballester, Austin Echelmeier, Gerrit Brehm, Nadia A. Zatsepin, Thomas D. Grant, Jesse D. Coe, Stella Lisova, Garrett Nelson, Shangji Zhang, Zachary F. Dobson, Sébastien Boutet, Raymond G. Sierra, Alexander Batyuk, Petra Fromme, **Raimund Fromme**, John C. H. Spence, Alexandra Ros, Syun-Ru Yeh, Denis L. Rousseau

Proceedings of the National Academy of Sciences Feb 2019, 201814526;

https://doi.org/10.1073/pnas.1814526116

57. **X-ray Emission Spectroscopy at X-ray Free Electron Lasers: Limits to Observation of the Classical Spectroscopic Response for Electronic Structure Analysis**

Scott Jensen, Brendan T Sullivan, Daniel A Hartzler, Jose Meza Aguilar, Salah Awel, Sasa Bajt, Shibom Basu, Richard Bean, Henry Chapman, Chelsie Conrad, Matthias Frank,**Raimund Fromme** , Jose M Martin-Garcia, Thomas D Grant, Michael Heymann, Mark S Hunter, Gihan Ketawala, Richard Adam Kirian, Juraj Knoska, Christopher Kupitz, Xuanxuan Li, Mengning Liang, Stella Lisova, Valerio Mariani, Victoria Leonidovna Mazalova, Marc Messerschmidt, Michael Moran, Garrett Nelson, Dominik Oberthuer, Alex Schaffer, Raymond G Sierra, Natalie Vaughn, Uwe Weierstall, Max O Wiedorn, P Lourdu Xavier, Jay-How Yang, Oleksandr Yefanov, Nadia Zatsepin, Andrew L Aquila, Petra Fromme, Sebastien Boutet, Gerald T Seidler, Yulia N Pushkar
The Journal of Physical Chemistry Letters https://doi.org/10.1021/acs.jpclett.8b03595 (Web): December 19, 2018

56. **Free-electron laser data for multiple-particle fluctuation scattering analysis.**

Pande K, Donatelli JJ, Malmerberg E, Foucar L, Poon BK, Sutter M, Botha S, Basu S, Bruce Doak R, Dörner K, Epp SW, Englert L, **Fromme R**, Hartmann E, Hartmann R, Hauser G, Hattne J, Hosseinizadeh A, Kassemeyer S, Lomb L, Montero SFC, Menzel A, Rolles D, Rudenko A, Seibert MM, Sierra RG, Schwander P, Ourmazd A, Fromme P, Sauter NK, Bogan M, Bozek J, Bostedt C, Schlichting I, Kerfeld CA, Zwart PH

Sci Data. 2018 Oct 2;5:180201. https://nature.com/articles/sdata2018201

55. **Enzyme intermediates captured "on the fly" by mix-and-inject serial crystallography**

Olmos JL Jr, Pandey S, Martin-Garcia JM, Calvey G, Katz A, Knoska J, Kupitz C, Hunter MS, Liang M, Oberthuer D, Yefanov O, Wiedorn M, Heyman M, Holl M, Pande K, Barty A, Miller MD, Stern S, Roy-Chowdhury S, Coe J, Nagaratnam N, Zook J, Verburgt J, Norwood T, Poudyal I, Xu D, Koglin J, Seaberg MH, Zhao Y, Bajt S, Grant T, Mariani V, Nelson G, Subramanian G, Bae E, **Fromme R**, Fung R, Schwander P, Frank M, White TA, Weierstall U, Zatsepin N, Spence J, Fromme P, Chapman HN, Pollack L, Tremblay L, Ourmazd A, Phillips GN Jr, Schmidt M.

BMC Biol 2018 May 31;16(1):59. Epub 2018 May 31
https://bmcbiol.biomedcentral.com/articles/10.1186/s12915-018-0524-5?report=reader

54. **Structure of a symmetric photosynthetic reaction center-photosystem**

Christopher Gisriel, Iosifina Sarrou, Bryan Ferlez, John H. Golbeck, Kevin E. Redding, **Raimund Fromme**

Science 2017, 357(6355), pp.1021-1025
https://www.science.org/doi/pdf/10.1126/science.aan5611

53. **Crystal structure of CO-bound cytochrome *c* oxidase determined by serial femtosecond X-ray crystallography at room temperature**

Izumi Ishigami, Nadia A. Zatsepin, Masahide Hikita, Chelsie E. Conrad, Garrett Nelson, Jesse D. Coe, Shibom Basu, Thomas D. Grant, Matthew H. Seaberg, Raymond G. Sierra, Mark S. Hunter, Petra Fromme, **Raimund Fromme**, Syun-Ru Yeh, and Denis L. Rousseau

PNAS 2017 ; published ahead of print July 11, 2017,
https://doi.org/10.1073/pnas.1705628114

52. **Diffraction data of core-shell nanoparticles from an X-ray free electron laser**

Li X, Chiu CY, Wang HJ, Kassemeyer S, Botha S, Shoeman RL, Lawrence RM, Kupitz C, Kirian R, James D, Wang D, Nelson G, Messerschmidt M, Boutet S, Williams GJ, Hartmann E, Jafarpour A, Foucar LM, Barty A, Chapman H, Liang M, Menzel A, Wang F, Basu S, **Fromme R**, Doak RB, Fromme P, Weierstall U, Huang MH, Spence JC, Schlichting I, Hogue BG, Liu H

Sci Data. 2017 Apr 11;4:170048. https://doi.org/10.1038/sdata.2017.48.

51. **Atomic structure of granulin determined from native nanocrystalline granulovirus using an X-ray free-electron laser**

Cornelius Gati, Dominik Oberthuer, Oleksandr Yefanov, Richard D. Bunker, Francesco Stellato, Elaine Chiu, Shin-Mei Yeh, Andrew Aquila, Shibom Basu, Richard Bean, Kenneth R. Beyerlein, Sabine Botha, Sébastien Boutet, Daniel P. DePonte, R. Bruce Doak, **Raimund Fromme**, Lorenzo Galli, Ingo Grotjohann, Daniel R. James, Christopher Kupitz, Lukas Lomb, Marc Messerschmidt, Karol Nass, Kimberly Rendek, Robert L. Shoeman, Dingjie Wang, Uwe Weierstall, Thomas A. White, Garth J. Williams, Nadia A. Zatsepin, Petra Fromme, John C. H. Spence, Kenneth N. Goldie, Johannes A. Jehle, Peter Metcalf, Anton Barty, and Henry N. Chapman

PNAS ,Feb 15, 2017, 114 (9) 2247-2252 https://doi.org/10.1073/pnas.1609243114

50. **Femtosecond structural dynamics drives the trans/cis isomerization in photoactive yellow protein**

Pande, K., Hutchison, C. D. M., Groenhof, G., Aquila, A., Robinson, J. S., Tenboer, J., Basu, S., Boutet, S., DePonte, D. P., Liang, M., White, T. A., Zatsepin, N. A., Yefanov, O., Morozov, D., Oberthuer, D., Gati, C., Subramanian, G., James, D., Zhao, Y., Koralek, J., Brayshaw, J., Kupitz, C., Conrad, C., Roy-Chowdhury, S., Coe, J. D., Metz, M., Xavier, P. L., Grant, T. D., Koglin, J. E., Ketawala, G., **Fromme, R.**, Srajer, V., Henning, R., Spence, J. C. H., Ourmazd, A., Schwander, P., Weierstall, U., Frank, M., Fromme, P., Barty, A., Chapman, H. N., Moffat, K., van Thor, J. J., and Schmidt, M.

Science 2016 May 6;352(6286):725-9. https://doi.org/10.1126/science.aad5081

49. **Protein Crystallization in an Actuated Microfluidic Nanowell Device**

Bahige G. Abdallah, Shatabdi Roy-Chowdhury, **Raimund Fromme**, Petra Fromme, and Alexandra Ros

Crystal Growth & Design 2016, 16 (4), pp 2074–2082
https://doi.org/10.1021/acs.cgd.5b01748 Publication Date (Web): February 25, 2016

48. **Macromolecular diffractive imaging using imperfect crystals**

Kartik Ayyer,Oleksandr M. Yefanov,Dominik Oberthür, Shatabdi Roy-Chowdhury, Lorenzo Galli, Valerio Mariani, Shibom Basu, Jesse Coe, Chelsie E. Conrad, **Raimund Fromme**, Alexander Schaffer, Katerina Dörner, Daniel James, Christopher Kupitz, Markus Metz, Garrett Nelson, Paulraj Lourdu Xavier, Kenneth R. Beyerlein, Marius Schmidt, Iosifina Sarrou, John C. H. Spence, Uwe Weierstall,Thomas A. White,Jay-How

Yang,Yun Zhao,Mengning Liang,Andrew Aquila, Mark S. Hunter, Joseph S. Robinson, Jason E. Koglin, Sébastien Boutet, Petra Fromme, Anton Barty& Henry N. Chapman

Nature 530, 202–206 (11 February 2016) https://doi.org/10.1038/nature16949

47. **Ternary structure reveals mechanism of a membrane diacylglycerol kinase**

Dianfan Li, Phillip J. Stansfeld, Mark S.P. Sansom, Aaron Keogh, Lutz Vogeley, Nicole Howe, Joseph A. Lyons, David Aragao, Petra Fromme, **Raimund Fromme**, Shibom Basu, Ingo Grotjohann, Christopher Kupitz, Kimberley Rendek, Uwe Weierstall, Nadia A. Zatsepin, Vadim Cherezov, Wei Liu, Sateesh Bandaru, Niall J. English, Cornelius Gati, Anton Barty, Oleksandr Yefanov, Henry N. Chapman, Kay Diederichs, Marc Messerschmidt, Sebastien Boutet, Garth J. Williams, M. Marvin Seibert & Martin Caffrey

Nature Communications (2015) https://doi.org/10.1038/ncomms10140 Published 17 Dec 2015

46. **Serial femtosecond crystallography of soluble proteins in lipidic cubic phase**

Raimund Fromme, Andrii Ishchenko,Markus Metz, Shatabdi Roy Chowdhury, Shibom Basu, Sébastien Boutet, Petra Fromme, Thomas A. White, Anton Barty, John C. H. Spence, Uwe Weierstall, Wei Liu and Vadim Cherezov

IUCrJ, Volume 2, 5, September 2015, https://doi.org/10.1107/S2052252515013160

45. **Crystal structure of rhodopsin bound to arrestin by femtosecond X-ray laser**

Kang Y, Zhou XE, Gao X, He Y, Liu W, Ishchenko A, Barty A, White TA, Yefanov O, Han GW, Xu Q, de Waal PW, Ke J, Tan MH, Zhang C, Moeller A, West GM, Pascal BD, Van Eps N, Caro LN, Vishnivetskiy SA, Lee RJ, Suino-Powell KM, Gu X, Pal K, Ma J, Zhi X, Boutet S, Williams GJ, Messerschmidt M, Gati C, Zatsepin NA, Wang D, James D, Basu S, Roy-Chowdhury S, Conrad CE, Coe J, Liu H, Lisova S, Kupitz C, Grotjohann I, **Fromme R**, Jiang Y, Tan M, Yang H, Li J, Wang M, Zheng Z, Li D, Howe N, Zhao Y, Standfuss J, Diederichs K, Dong Y, Potter CS, Carragher B, Caffrey M, Jiang H, Chapman HN, Spence JC, Fromme P, Weierstall U, Ernst OP, Katritch V, Gurevich VV, Griffin PR, Hubbell WL, Stevens RC, Cherezov V, Melcher K, Xu HE

Nature 2015 https://doi.org/10.1038/nature14656, online 22 July 2015

*44. **Chapter Twenty-Two – Crystallization of Photosystem II for Time-Resolved Structural Studies Using an X-ray Free Electron Laser**

Jesse Coe, Christopher Kupitz, Shibom Basu, Chelsie E. Conrad, Shatabdi Roy-Chowdhury, **Raimund Fromme**, Petra Fromme

Methods in Enzymology, *Volume 557, 2015, Pages 459-482*

43. **A novel inert crystal delivery medium for serial femtosecond crystallography**

Chelsie E. Conrad, Shibom Basu, Daniel James, Dingjie Wang, Alexander Schaffer, Shatabdi Roy-Chowdhury, Nadia A. Zatsepin, Andrew Aquila, Jesse Coe, Cornelius Gati, Mark S. Hunter, Jason E. Koglin, Christopher Kupitz, Garrett Nelson, Ganesh Subramanian, Thomas A. White, Yun Zhao, James Zook, Sébastien Boutet, Vadim Cherezov, John C. H. Spence, **Raimund Fromme**, Uwe Weierstall, and Petra Fromme

IUCrJ Volume 2| Part 4| July 2015| Pages 421-430 ISSN: 2052-2525, https://doi.org/10.1107/S2052252515009811

42. **Structural basis for bifunctional peptide recognition at human δ-opioid receptor.**

Gustavo Fenalti, Nadia A Zatsepin, Cecilia Betti, Patrick Giguere, Gye Won Han, Andrii Ishchenko, Wei Liu, Karel Guillemyn, Haitao Zhang, Daniel James, Dingjie Wang, Uwe Weierstall, John CH Spence, Sébastien Boutet, Marc Messerschmidt, Garth J Williams, Cornelius Gati, Oleksandr M Yefanov, Thomas A White, Dominik Oberthuer, Markus Metz, Chun Hong Yoon, Anton Barty, Henry N Chapman, Shibom Basu, Jesse Coe, Chelsie E Conrad, **Raimund Fromme**, Petra Fromme, Dirk Tourwé, Peter W Schiller, Bryan L Roth, Steven Ballet, Vsevolod Katritch, Raymond C Stevens, Vadim Cherezov

Nature structural & molecular biology (2015) 22, 265–268

41. **A Hinge Migration Mechanism Unlocks the Evolution of Green-to-Red Photoconversion in GFP-like Proteins.**

Hanseong Kim, Taisong Zou, Chintan Modi, Katerina Dörner, Timothy J Grunkemeyer, Liqing Chen, **Raimund Fromme**, Mikhail V Matz, S Banu Ozkan, Rebekka M Wachter
Structure 2015 Jan 6;23(1):34-43 https://doi.org/10.1016/j.str.2014.11.011

40. Time-resolved serial crystallography captures high-resolution intermediates Of photoactive yellow protein

Jason Tenboer, Shibom Basu, Nadia Zatsepin,Kanupria Pande,Despina Milathianaki, Matthias Frank, Mark Hunter, Sébastien Boutet,Garth J. Williams, Jason E. Koglin, Dominik Oberthuer, Michael Heymann, Christopher Kupitz, Chelsie Conrad, Jesse Coe, Shatabdi Roy-Chowdhury,Uwe Weierstall, Daniel James, Dingjie Wang, Thomas Grant, Anton Barty, Oleksandr Yefanov, Jennifer Scales, Cornelius Gati, Carolin Seuring, Vukica Srajer, Robert Henning, Peter Schwander, **Raimund Fromme**, Abbas Ourmazd, Keith Moffat, Jasper Van Thor, John H. C. Spence, Petra Fromme, Henry N. Chapman, Marius Schmidt
Science 2014, 1242-1246. [https://doi.org/10.1126/science.1259357]

39. Expression, purification and crystallization of CTB-MPR, a candidate mucosal vaccine component against HIV-1

H-H Lee, I Cherni, H Yu, **R Fromme**, JD Doran, I Grotjohann, M Mittman, S Basu, A Deb, K Dörner, A Aquila, A Barty, S Boutet, HN Chapman, RB Doak, MS Hunter, D James, RA Kirian, C Kupitz, RM Lawrence, H Liu, K Nass, I Schlichting, KE Schmidt, MM Seibert, RL Shoeman, JCH Spence, F Stellato, U Weierstall, GJ Williams, C Yoon, D Wang, NA Zatsepin, BG Hogue, N Matoba, P Fromme, TS Mor

IUCrJ, 2014, 5, 305-317 September 1 [doi:10.1107/S2052252514014900]

38. Visualizing a protein quake with time-resolved X-ray scattering at a free-electron laser

David Arnlund, Linda C Johansson, Cecilia Wickstrand, Anton Barty, Garth J Williams, Erik Malmerberg, Jan Davidsson, Despina Milathianaki,Daniel P DePonte, Robert L Shoeman, Dingjie Wang, Daniel James, Gergely Katona, Sebastian Westenhoff, Thomas A White, Andrew Aquila,Sadia Bari, Peter Berntsen, Mike Bogan, Tim Brandt vanDriel,R Bruce Doak,Kasper SkovKjær, Matthias Frank, **Raimund Fromme**, Ingo Grotjohann, Robert Henning, Mark S Hunter, Richard A Kirian, Irina Kosheleva, Christopher Kupitz, Mengning Liang, Andrew V Martin, Martin Meedom Nielsen,MarcMesserschmidt, M Marvin Seibert, Jennie Sjöhamn, Francesco Stellato, Uwe Weierstall, Nadia A Zatsepin, John C H Spence, Petra Fromme, Ilme Schlichting, Sébastien Boutet, Gerrit Groenhof, Henry N Chapman&Richard Neutze

Nature Methods (2014) Aug 10. https://doi.org/10.1038/nmeth.3067.

37. **Serial time-resolved crystallography of photosystem II using a femtosecond X-ray laser**

Christopher Kupitz, Shibom Basu, Ingo Grotjohann, **Raimund Fromme**, Nadia A. Zatsepin,Kimberly N. Rendek,Mark S. Hunter, Robert L. Shoeman, Thomas A. White, Dingjie Wang, Daniel James, Jay-How Yang, Danielle E. Cobb,Brenda Reeder, Raymond G. Sierra, Haiguang Liu, Anton Barty,Andrew L. Aquila, Daniel Deponte, Richard A. Kirian,Sadia Bari, Jesse J. Bergkamp,Kenneth R. Beyerlein, Michael J. Bogan, Carl Caleman, Tzu-Chiao Chao,Chelsie E. Conrad, Katherine M. Davis, Holger Fleckenstein, Lorenzo Galli, Stefan P. Hau-Riege, Stephan Kassemeyer,Hartawan Laksmono, Mengning Liang, Lukas Lomb, Stefano Marchesini, Andrew V. Martin, Marc Messerschmidt Despina Milathianaki, Karol Nass, Alexandra Ros, Shatabdi Roy-Chowdhury, Kevin Schmidt, Marvin Seibert, Jan Steinbrener, Francesco Stellato, Lifen Yan, Chunhong Yoon, Thomas A. Moore, Ana L. Moore, Yulia Pushkar,Garth J.

Williams,Sebastien Boutet, R. Bruce Doak, Uwe Weierstall, Matthias Frank, Henry N. Chapman,John C. H. Spence & Petra Fromme

Nature 2014 Jul 9 https://doi.org/10.1038/nature13453

36. Microcrystallization techniques for serial femtosecond crystallography using photosystem II from Thermosynechococcus elongatus as a model system
Christopher Kupitz, Ingo Grotjohann, Chelsie E. Conrad, Shatabdi Roy-Chowdhury, **Raimund Fromme** and Petra Fromme

***Phil. Trans. R. Soc. B* 2014** 369, 20130316, published 9 June 2014

35. X-Ray Crystal Structure of the passenger domain of Plasmid encoded toxin(Pet), an Autotransporter Enterotoxin from enteroaggregative *Escherichia coli* (EAEC)

J. Domingo Meza-Aguilar, Petra Fromme Alfredo Torres-Larios, Guillermo Mendoza-Hernández, Ulises Hernandez-Chiñas, Roberto A. Arreguin-Espinosa de los Monteros, Carlos A. Eslava Campos , **Raimund Fromme**

Biochemical and Biophysical Research Communications , Received 31 January 2014, Available online 12 February 2014 https://doi.org/10.1016/j.bbrc.2014.02.016

***34. Structural Analysis of Photosynthetic Proteins**,
Kupitz, Christopher; **Fromme, Raimund**; Grotjohann, Ingo; Fromme, Petra
Source: Handbook of Porphyrin Science with Applications to Chemistry, Physics, Materials Science, Engineering, Biology and Medicine, Vol 28: Chlorophyll, Photosynthesis and Bio-Inspired Energy Volume: 28 Pages: 1-40 Published: 2014

33. Lipidic cubic phase injector facilitates membrane protein serial femtosecond crystallography

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 Accepted 24 Jan 2014 https://www.nature.com/articles/ncomms4309

32. Serial Femtosecond Crystallography of G Protein–Coupled Receptors

Wei Liu, Daniel Wacker, Cornelius Gati, Gye Won Han, Daniel James, Dingjie Wang, Garrett Nelson, Uwe Weierstall, Vsevolod Katritch, Anton Barty, Nadia A. Zatsepin, Dianfan Li, Marc Messerschmidt, Sébastien Boutet, Garth J. Williams, Jason E. Koglin, M. Marvin Seibert, Chong Wang, Syed T. A. Shah, Shibom Basu, **Raimund Fromme**, Christopher Kupitz, Kimberley N. Rendek, Ingo Grotjohann, Petra Fromme, Richard A. Kirian, Kenneth R. Beyerlein, Thomas A. White, Henry N. Chapman, Martin Caffrey, John C. H. Spence, Raymond C. Stevens, and Vadim Cherezov

Science 20 December 2013: 1521-1524. [https://doi.org/10.1126/science.1244142]

31. Structure of a photosynthetic reaction centre determined by serial femtosecond crystallography

Linda C. Johansson, David Arnlund, Gergely Katona, Thomas A. White, Anton Barty, Daniel P. DePonte,Robert L. Shoeman, Cecilia Wickstrand, Amit Sharma, Garth J. Williams, Andrew Aquila, Michael J. Bogan, Carl Caleman, Jan Davidsson, R. Bruce Doak, Matthias Frank, **Raimund Fromme**, Lorenzo Galli, Ingo Grotjohann, Mark S. Hunter, Stephan Kassemeyer, Richard A. Kirian,Christopher Kupitz, Mengning Liang, Lukas Lomb, Erik Malmerberg, Andrew V. Martin, Marc Messerschmidt, Karol Nass, Lars Redecke, M. Marvin Seibert, Jennie Sjöhamn, Jan Steinbrener, Francesco Stellato, Dingjie Wang, Weixaio Y. Wahlgren, Uwe Weierstall, Sebastian Westenhoff, Nadia A. Zatsepin, Sébastien Boutet, John C.H. Spence, Ilme Schlichting, Henry N. Chapman, Petra Fromme & Richard Neutze

Nature Communications (2013),4,Article number: 2911
https://doi.org/10.1038/ncomms3911

30. Acid-base catalysis and crystal structures of a least-evolved ancestral GFP-like protein undergoing green-to-red photoconversion

Hanseong Kim, Timothy J Grunkemeyer, Chintan Modi, Liqing Chen, **Raimund Fromme**, Mikhail V. Matz and Rebekka Maria Wachter
Biochemistry, Just Accepted Publication Date (Web): October 17, 2013 (Article)
https://doi.org/10.1021/bi401000e

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

Rendek KN, **Fromme R,** Grotjohann I, Fromme P.
Acta Crystallogr Sect F Struct Biol Cryst Commun. 2013 Feb 1;69(Pt 2):141-6.
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28. **The 1.6 Å resolution structure of a FRET-optimized Cerulean fluorescent protein.**

Watkins JL, Kim H, Markwardt ML, Chen L, **Fromme R**, Rizzo MA, Wachter RM.
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27. **Natively Inhibited Trypanosoma brucei Cathepsin B Structure Determined by Using an X-ray Laser.**

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Science (2013)Volume 339, Pages 227-230**.**

26. Improving the Accuracy of Macromolecular Structure Refinement at 7 Å Resolution.
Axel T. Brunger, Paul D. Adams, Petra Fromme, **Raimund Fromme**, Michael Levitt, Gunnar F. Schröder
Structure(2012) Volume 20, Issue 6, 2012, Pages 957–966
25. High-Resolution Protein Structure Determination by Serial Femtosecond Crystallography.
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Science(2012) 339,227-30

24. **Time-resolved protein nanocrystallography using an X-ray free-electron laser.**
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Chapman HN.

Opt Express , 2012 Jan 30;20(3):2706-16. https://doi.org/10.1364/OE.20.002706.

23. Atomic Resolution X-ray Structure of the Substrate Recognition Domain of Higher Plant Ribulose-bisphosphate Carboxylase/Oxygenase (Rubisco) Activase.

Henderson, J.N., Kuriata, A.M., **Fromme, R.,** Salvucci, M.E. & Wachter, R.M.

Journal of Biological Chemistry*(2011),* vol. 286, no. 41, pp. 35683-35688. https://www.jbc.org/article/S0021-9258(20)73774-9/fulltext

22. **Structure-factor analysis of femtosecond microdiffraction patterns from protein nanocrystals** Kirian RA, White TA, Holton JM, Chapman HN, Fromme P, Barty A, Lomb L, Aquila A, Maia FR, Martin AV, **Fromme R**, Wang X, Hunter MS, Schmidt KE, Spence JC (2011) **Acta Crystallogr A. (2011)** Mar;67(Pt 2):131-40. Epub 2011 Feb 16.

21. **Femtosecond X-Ray Protein Nanocrystallography**. Chapman, H. N., Fromme, P., Barty, A., White, T. A., Kirian, R. A., Aquila, A., Hunter, M. S., Schulz, J., DePonte, D. P., Weierstall, U., Doak, R. B., Maia, F. R. N. C., Martin, A. V., Schlichting, I., Lomb, L., Coppola, N., Shoeman, R. L., Epp, S. W., Hartmann, R., Rolles, D., Rudenko, A., Foucar, L., Kimmel, N., Weidenspointner, G., Holl, P., Liang, M., Barthelmess, M., Caleman, C., Boutet, S., Bogan, M. J., Krzywinski, J., Bostedt, C., Bajt, S., Gumprecht, L., Rudek, B., Erk, B., Schmidt, C., Hoemke, A., Reich, C., Pietschner, D., Strueder, L., Hauser, G., Gorke, H., Ullrich, J., Herrmann, S., Schaller, G., Schopper, F., Soltau, H., Kuehnel, K., Messerschmidt, M., Bozek, J. D., Hau-Riege, S. P., Frank, M., Hampton, C. Y., Sierra, R. G., Starodub, D., Williams, G. J., Hajdu, J., Timneanu, N., Seibert, M. M., Andreasson, J., Rocker, A., Joensson, O., Svenda, M., Stern, S., Nass, K., Andritschke, R., Schroeter, C., Krasniqi, F., Bott, M., Schmidt, K. E., Wang, X., Grotjohann, I., Holton, J. M., Barends, T. R. M., Neutze, R., Marchesini, S., Fromme, R., Schorb, S., Rupp, D., Adolph, M., Gorkhover, T., Andersson, I., Hirsemann, H., Potdevin, G., Graafsma, H., Nilsson, B., and Spence, J. C. H. **Nature**(2011), 470 , *73-77.*

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***19. Raimund Fromme**(2008) in**:** Photosynthetic protein complexes, Editor: P.Fromme, Ferredoxin and Flavodoxin mediated Electron Transfer in Photosystem I. Bookchapter. Wiley-VCH, Weinheim, pp. 341-352

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*** for book chapter**

Honors, Awards and Fellowships:

6/2019	Gordon Research Conference on Bioenergetics, Andover, NH, USA, invited talk
11/2017	PP Savani University, Surat, Gujarat, India, invited keynote lecture
7/2017	Gordon Research Conference on Photosynthesis,Newy, USA invited talk
10/2014	Structural Biology symposium University of Alabama Birmingham, USA, keynote lecture
2014	International crystallographic conference. CTSB Heraklion, Greece. Opening keynote lecture
2009	International Visiting Fellowship University *of* Sydney, Australia (20,000$)
1988-1989	Two Year Graduate Fellowship, Berlin Government(NaföG)

Recent Presentations 2004-2019

Fromme,R. (2020) Time resolved Crystallography of Photosynthetic reactions by use of XFEL at SACLA, 29th Western Photosynthesis Conference, January 2-5, Bodega Bay, Ca,USA, **invited talk**

Fromme, R. (2019) Structure and Function of Protein Complexes in Photosynthesis, Gordon Research Conference on Photosynthesis, July 21 - 26, Newry, ME, USA **Discussion Leader**,

Fromme, R.(2019) "Time Resolved Structures of Key Enzymes in Life Processes", Andover, NH, USA, Gordon Research Conference, Bioenergetics, June2-7, **invited talk**

Fromme, R. (2019) Photosystem I science with XFEL's, 6th Ringberg Meeting, Castle Ringberg from Max-Planck-Society, February 27 – March 2nd, near Tegernsee, Germany, **invited talk**

Fromme, R. (2019) Photosystem I science with XFEL's, European XFEL Users' Meeting 22 January 2019 / XTOB Headquarters, European XFEL,Schenefeld,Germany **invited plenary lecture**

Fromme, R. (2018) What can we learn from the high resolution structures of the heliobacterial photosystem and photosystem I of cyanobacteria in respect of evolution of photosynthesis? CMBC 8 th BIT conference, Fukuoka, Japan, October 14-16, **invited talk and discussion leader**

Fromme,R.(2018) The trimeric photosystem I at 2.3 Å resolution, ISPR Vancouver, Canada, August 9-12, **Poster Presentation**

Fromme,R.(2018) What can we learn from the high resolution structures of the heliobacterial photosystem and photosystem I of cyanobacteria in respect of evolution of photosynthesis? ISPP Vancouver, Canada, August5-9, **Invited lecture**

Fromme, R.(2018) The structure of an ancestral photosystem shines light on evolution in photosynthesis, Advanced methods in macromolecular crystallization VIII,FEBS, Academic and University Center, Nové Hrady, Czech Republic June 10-16
Invited plenary lecture

Fromme, R.(2018) What can we learn from high resolution Heliobacterial Photosystem and Photosystem I structures in respect of Evolution and Nanotechnology? Nanoworld conference, San Francisco, April 23-25, **invited plenary lecture**

Fromme, R, (2018) Challenges and limits of membrane protein structure biology in times of X-ray Free Electron Lasers. Workshop:Dynamics,Structure and Function in Biological Systems Scientific opportunities at ASU Compact X-ray Free Electron Laser Biodesign Institute, Center for Applied Structural Discovery Arizona State University, Tempe, AZ April6 -8, **invited talk**

Fromme R., Roy-Chowdhury, S., Whitelegge, J. and Fromme, P **(2018)** The trimeric Photosystem I at 2.3 Å resolution. Oracle AZ, January 4-7, Western Photosynthesis Conference, **poster presentation**

Fromme, R.(2017) Structure of the symmetric photosystem from Heliobacterium modesticaldum, 8th International Conference "Photosynthesis and Hydrogen Energy Research for Sustainability – 2017", Hyderabad, India, October 30-November 4, **invited talk**

Fromme, R. (2017) First structure of an ancestral photosystem /towards time resolved crystallography with X-ray Free electron lasers, PP Savani University, Surat, Gujarat, India, **invited keynote lecture** , November 5

Fromme, R. (2017) The structure of an ancestral photosystem shines light on evolution in photosynthesis, University of Hyderabad School of Life Sciences, **invited seminar**, Nov 6 2017

Fromme, R., Gisriel, C., Sarrou, J., Golbeck, J. & Redding, K. **(2017**) "The High Resolution Structure of the *Heliobacterium modesticaldum* - A Different Reaction Centre" Gordon Research Conference on Photosynthesis, **invited talk**, Newry, MA, USA July 16-21

Fromme, R. (2017) Solar light harvesting, a new biological structure in between a Reaction Center and a Photosystem, XLII EL.B.A. NW Nanoforum on Structural NanoProteomics, Pradalunga (Bergamo, Italy) held on 21 June 2017, **invited talk**

Fromme, R. (2017) Structure of a homodimeric reaction center, invited talk Arizona Biophest , Tempe, AZ, April 22nd, **invited talk**

Fromme, R., Gisriel, C., Sarrou, J., Golbeck, J. & Redding, K. **(2017**)Reaction Centers in Photosynthesis: Heliobacterium modesticaldum has a unique structure compared to the known structures of bacterial reaction centers as the photosystems I and II**, invited talk** 26th Western Photosynthesis Conference, Marshall, Ca, January 6- 8

Fromme, R., (2016) With continuous diffraction towards high resolution time resolved structures of photosystem II, poster presentation, **17th** International Photosynthesis Conference, Maastricht, August 8-12, Netherlands

Fromme, R., (2016) Time-resolved Crystallography: Workshop at the 60th Biophysical Society meeting, Los Angeles, Ca , March 1st , invited talk

Fromme, R., (2016) TOWARDS HIGH RESOLUTION TIME RESOLVED STRUCTURES OF PHYCOBILIPROTEINS FROM CYANOBACTERIA WITH HARD X-RAY FREE-ELECTRON LASER (FEL), invited talk, 25th Western Photosynthesis Conference, Devils' Thumb, CO, USA , January 3-6

Fromme, R. (2015) Investigation of coherence in light harvesting proteins from cyanobacteria and cryptophytes with Free electron laser, American Physical Society (APS), Tempe Az, Invited talk, October 17

Fromme, R. (2015) Towards time resolved structures of proteins using a hard X-ray Free Electron laser, invited talk, CFEL, Hamburg, Germany, June 11

Fromme, R. (2015) Towards time resolved structures of proteins using a hard X-ray Free Electron laser, invited talk, SACLA 1st international meeting, Japan March 26-27

Fromme, R. **(2015)** Phycobilisome proteins from *T. elongatus* as model for crystal transfer into Lipidic cubic phase for X-ray Free electron laser (FEL) experiments, invited talk at West Coast Protein Crystallography Workshop, Monterray, Ca, March 15-18

Fromme, R., Roy-Chowdhury, S., Basu, S. and Fromme, P. (2015)Towards time resolved structures of Phycobilisome proteins with a hard X-ray Free electron laser, poster presentation at 2nd BioXFEL conference Ponce, Puerto Rico, January 13-17

Fromme, R (2014) Towards time resolved structures of membrane proteins using a hard X-ray Free electron laser, Invited seminar Wageningen University, Netherlands, October 29

Fromme, R (2014) Towards time resolved structures of membrane proteins using a hard X-ray Free electron laser. Structural Biology symposium University of Alabama Birmingham, USA, **Keynote lecture**, October 8

Raimund Fromme, Ingo Grotjohann, Christopher Kupitz, Shibom Basu, Shatabdi Roy-Chowdhury and Petra Fromme(2014)Towards the time resolved X-ray structure determination of proteins in photosynthesis. International crystallographic conference. CTSB Heraklion, Greece. **Opening keynote lecture**, September 19

Fromme, R., S. Roy-Chowdhury, S.Basu and P. Fromme **(2014)** Towards time resolved structures of Phycobilisome proteins with a X-ray Free electron laser" Gordon Research Conference on Photosynthesis Mount Snow Resort, Vt,USA August 10-15 (Poster Presentation)

Fromme, R. et al. (2014) Towards the time resolved Structures using a Hard X-ray Free Electron Laser. BIT's AnalytiX 2014 in Dalian, China(invited oral presentation)

Fromme, R. (2014) The First Trimeric Structure of the Membrane Protein Menaquinol Fumarate Reductase at 3.0A Resolution. BIT's 4th Annual World Congress of Molecular& Cell Biology, April 26 in Dalian, China (invited oral presentation).

Fromme, R. et al. (2013) Femtosecond nanocrystallography of membrane proteins opens a new era in Structural Biology, 6 th Asia & Oceanic Conference on Photobiology(AOCP), November 11-16 , Sydney, Australia(oral presentation)

Fromme, R. et al. (2013) Towards the time resolved X-ray structure determination of Photosystem II", Royal Society Meeting X-ray lasers in biology, London UK, October 14-18(with satellite meeting)

Fromme, R., Basu, S., Kupitz, C., Grotjohann, I. , Fromme, P. **(2013)**Towards the time resolved X-ray structure determination of Photosystem II", 16th International Photosynthesis Congress St. Louis, USA, August 10-16, (Poster presentation)

Fromme,R., Xin, Y. Fromme, P. and Blankenship, R. **(2013)** Why is QFR a trimer in *Chloroflexus aurantiacus ?* 10th European Biophysics Congress Lisbon, Portugal, July10-16, (Poster presentation)

Fromme,R., Xin, Y. Fromme, P. and Blankenship, R. **(2013)** Why is QFR a trimer in *Chloroflexus aurantiacus* ? 50th Gordon Research Conference on Bioenergetics, Procter Academy, Andover NH, June 23-28, (Poster presentation)

Fromme, R. (2013) Progress in Photosystem II structure determination in different S-states, 4th Imager workshop, Koenigstein(Taunus), Germany, April 23-24, Invited talk.

Fromme, R. (2013) Towards the time resolved X-ray structure determination of Photosystem II"EFRC seminar Department of Chemistry and Biochemistry , Arizona State University, April 4. Invited talk.

Fromme, R. , Xin, Y. , Fromme, P. Blankenship, R. **(2013)** The first Trimeric Structure of the Membrane Protein Menaquinol Fumerate Reductase at 3.0 A Resolution from *Chloroflexus aurantiacus.* 22nd Western Photosynthesis conference Asilomar, Ca. January 3-6 . Invited talk.

Fromme,R. , Grotjohann, Kupitz, C. , Basu, S. , Fromme, P. **(2012**) Towards the time resolved X-ray structure determination of proteins. EBEC conference in Freiburg Germany, September 2012, (Poster presentation)

Fromme,R. ,Sarrou,I. Fromme,P. and Redding, K **(2012)** 3D DIFFRACTING CRYSTALS OF THE REACTION CENTER FROM *HELIOBACTERIUM MODESTICALDUM, 21 th Western Photosynthesis Conference Asilomar, Ca , January 5-8.(invited lecture)*

Fromme, R., Rendek K. N., Simmons, C, Lin, C, Flory, J., Ingo Grotjohann, Yan Liu, Hao Yan, and Petra Fromme **(2011)** Crystallization of a 3-D DNA Nanostructure for Development of an Artificial Oxygen-Evolving Complex. 20 th Western Photosynthesis Conference Asilomar, Ca January 6-9 (invited lecture)

Fromme, R., Yu, H., Grotjohann, I., Jolley, C, Wang, M., Bottin,H., Setif, P.& Fromme, P. **(2010)** Crystal structure of Photosystem I with Ferredoxin, Gordon Research Conference. Diffraction Methods in Structural Biology. July 18-23, Lewis, ME (Poster presentation)

Rendek K. N. **Fromme, R**, Simmons, C, Lin, C, Flory, J., Grotjohann, I., Liu, Y., Yan, H., and Fromme, P. **(2010)** Crystallization of a 3-D DNA Nanostructure for Development of an Artificial Oxygen-Evolving Complex. Gordon Research Conference. Diffraction Methods in Structural Biology. July 18-23, Lewis, ME (Poster presentation)

Fromme, R., Chen, M., Larkum, A.& Fromme, P. **(2010)**LIGHT HARVESTING AND ITS ADAPTATION OF MARINE CYANOBACTERIA AND GREEN ALGAE FROM SAMPLES COLLECTED AT HERON ISLAND (GREAT BARRIER REEF, AUSTRALIA). 19th Western Photosynthesis Conference Asilomar, Ca January 6-9 (Poster presentation)

Fromme, R.(**2009**) Blue proteins in Photosynthesis. Structure of different Phycocyanins and Plastocyanins. University of Sydney, Seminar of the Biology DepartmentMay 15(invited lecture)

Fromme, R. **(2009)** Towards the atomic structure of C-Phycocyanin from *Galdieria sulphuraria* and *Phormidium laminosum*. Australia National University, Canberra, April 6 (invited seminar)

Fromme, R., Bukhman-DeRuyter Y.,Vanselow,C.,Brune,D., Lee, J. W., Zook, J. and Fromme, P. (2009) HIGH RESOLUTION STRUCTURES OF C-PHYCOCYANIN OF *PHORMIDIUM LAMINOSUM*REVEAL NEW INSIGHTS TO THE ASSEMBLYPROCESS OF THE PHYCOBILISOME Western Photosynthesis Conference, Asilomar, California, January 8-11(Poster Presentation)

Fromme, R., Katiliene, Z., Fromme, P. and Ghirlanda, G. (2008) Three states of Cyanovirin-N or why we need high resolution X-ray Crystallography. ACS regional Conference LasVegas, Nevada, September 24(invited lecture)

Fromme, R,(2008) Photosystem I and its natural electron acceptor ferredoxin in co-crystals at 3.8 Å resolution. Washington University, St. Louis(Mo). August 22(invited seminar)

Fromme, R., Yu, H., Jolley, C., Grotjohann, I., Wang, M., Sétif, Pierre., Bottin, Hervé. and Fromme, P. (2008) Structure of photosystem I and its natural electron acceptor ferredoxin in co-crystals at 3.8 Å resolution. 2008 EBEC Conference, Dublin Ireland, July 17-24, (invited lecture)

Fromme, R. (2008) Focus on Membrane Proteins-Photosystem I in a giant supercomplex with ferredoxin –in 2008 National Laboratory Brookhaven(NY). June 18-22, (invited lecture) and *The dialysis method applied to Phycocyanin* –four days each day 6 hours of instruction during the workshop

Fromme, R., Katiliene, Z., Fromme, P. and Ghirlanda, G. (2008) Three states of Cyanovirin-N or why we need high resolution X-ray Crystallography. Seminar in University of Arizona Biophest, Tucson, Arizona, April 19. (invited talk)

Fromme, R., Thangaraj, B., Vanselow, C. and Fromme, P. (2008) Structure of C-phycocyanin at 1.85 Å from *Galdieria sulphuraria*. In 2008 Western Photosynthesis Conference, Asilomar, California, January 3-6 (invited talk)

Yana S. Bukhman-DeRuyter, Ingo Grotjohann, Beatrix Schlarb-Ridley, Hualing Mi, **Raimund Fromme** and Petra Fromme. INVESTIGATION OF COMPLEX FORMATION AND CRYSTALLIZATION OF PHOTOSYSTEM I AND PLASTOCYANIN IN CYANOBACTERIA In 2008 Western Photosynthesis Conference, Asilomar, California, January 3-6 (invited talk)

Ghirlanda, G., **Fromme, R**., Fromme, P., Katiliene, Z., Bogani, F., Giomarelli, B. and Mori, T. (2007) A monovalent mutant of cyanovirin-N provides insight into the role of multiple interactions with gp 120 for antiviral activity. in 2007 Protein Society Boston, MA. (July 21-25)(Poster Presentation)

Bukhman-DeRuyter, Y.S., Grotjohann, I., Schlarb-Ridley, B., Mi, H., **Fromme, R**. and Fromme, P. (2007) Investigation of complex formation and crystallization of photosystem I and plastocyanin in Cyanobacteria. In 2007 Western photosynthesis conference, Asilomar, California. January 4-7(Poster Presentation)

Thangaraj, B., Grotjohann, I., **Fromme, R**., Talreja, S., Kim, D., Alexander Gunn, D.B. and Fromme, P. (2007) Crystallization and spectroscopic studies of photosystem II. In 2007 Western photosynthesis conference, Asilomar, California. January 4-7(Poster presentation)

Fromme, R., Bukhman-DeRuyter, Y., Vanselow, C., Brune, Dan., Lee, J.W. and Fromme, P. (2007) Structure of C-phycocyanin at 1.9 Å from *Phormidium laminosum*. In 2007 Western photosynthesis conference, Asilomar, California. January 4-7(invited talk)

Fromme, R., Bukhman-DeRuyter, Y., Vanselow, C., Brune, Dan., Lee, J.W. and Fromme, P. (2006) Structure of C-Phycocyanin at 1.96 A from Phormidium laminosum. In 2006 ACS regional conference, Tucson, Arizona. October 14-18 (invited talk)

Varco-Merth, B., Jolley, C., Wang, M. and **Fromme, R**. (2006) The proton-drive turbine of the chloroplast ATP-synthase. In 2006 Western photosynthesis conference, Asilomar, California. January 6-8 (Poster presentation)

Yu, H., **Fromme, R**., Grotjohann, I., Wang, M., Setif, P., Bottin, H. and Fromme, P. (2006) Investigation of X-ray structure of PS I and its natural electron acceptor ferredoxin. In 2006 Western photosynthesis conference, Asilomar, California. January 6-8 (Poster presentation)

Fromme,R., Yu, H., Grotjohann, I., Wang, M., Setif, P., Bottin, H. and Fromme, P.(2006) X-ray Structure Analysis from co-crystals of Photosystem I and Ferredoxin. Asilomar, California. January 6-8 2006 (invited talk)

Fromme, R., Yu, H., Grotjohann, I. and Fromme, P. (2005) Cocrystals of photosystem I with its soluble natural electron acceptor ferredoxin at 4 Å resolution. In FEBS Congress, Budapest, Hungary (July 2-5)(Poster Presentation)

He, L., **Fromme, R**., Benston, A. and Frasch, W. (2004) F1-ATPase Molecular Motor Based Single -Molecule Biosensor. In Nanotechnology business opportunities forum, Meritus Mandarin, Singapore(July 26-28)(invited talk)