Protein Three Dimensional Nano-Crystallography by Imaging and Diffraction

Nederlof, I.

Curriculum Vitae

Igor Nederlof was born in Stanford, California on the 29th of March 1979. In 1997 he graduated from het Baarnsch Lyceum and went to study Analytical Chemistry at the Institute for Life Science and Chemistry Utrecht. In 2003 he graduated obtaining a bachelor's degree in analytical chemistry. During this time he did a 10-month research internship in the Sacchettini Lab at Texas A&M University over-expressing, purifying and crystallising β-amyloid and α2-Macroglobulin from Alzheimer's disease. He obtained a master's degree in Biological Chemistry in 2006 from Leiden University, after doing a 6-month internship in the Page Lab at Brown University. At Brown he studied the plasticity of neurons by doing structural studies of Spine Associated RapGAP. During his master's he worked part time for Key Drug Prototyping, a small "start-up" biotech company that focused on structure aided drug design through X-ray protein crystallography. After his graduation he worked full time at Key drug prototyping from April 2006 through December 2008. In January 2009 he started his PhD in the Biophysical Structural Chemistry group of Jan Pieter Abrahams at Leiden University. His research project focuses on electron microscopy and diffraction studies of 3D protein crystals of which the results are presented in this thesis. This project is still in full development as he has accepted a post-doc position in the Biophysical Structural Chemistry group continuing his work.

List of Publications

2013

Nederlof, I., Li, J.W., van Heel, M., Abrahams, J.P. (2013). *A Medipix Quantum Area Detector Allows Rotation Electron Diffraction Data Collection of Sub-Micron 3D Protein Crystals* (under review)

Nederlof, I., Van Genderen, E., Li, J.W., Abrahams, J.P. (2013). *Imaging Protein 3D Nanocrystals with Cryo-EM* (accepted for publication in Acta Cryst. Sec. D)

2012

Gupta, A., **Nederlof, I**., Sottini, S., Tepper, A. W. J. W., Groenen, E. J. J., Thomassen, E. A. J. & Canters, G. W. (2012). *Journal of the American Chemical Society* **134**, 18213-18216.

Abrahams, J., Georgieva, D., Jiang, L. & **Nederlof, I.** (2012). *NATO Science for Peace and Security Series B: Physics and Biophysics, Uniting Electron Crystallography and Powder Diffraction*, edited by U. Kolb, K. Shankland, L. Meshi, A. Avilov & W. I. F. David, pp. 389-398. Springer Netherlands.

Nederlof, I., Van Genderen, E., Hoedemaeker, F., Abrahams, J.P., Georgieva, D., *Protein Crystal Growth*, *Modern Aspects of Bulk Crystal and Thin Film Preparation*, edited by N. Kolesnikov & E. Borisenko, pp. 463-476. InTech

2011

Jiang, L.H., Georgieva, D., **Nederlof, I.**, Liu, Z.F., Abrahams, J.P., *Image Processing and Lattice Determination for Three-Dimensional Nanocrystals*, *Microscopy and Microanalysis*, vol. 17, no. 6, pp. 879-885.

Nederlof, I., Hosseini, R., Georgieva, D., Luo, J.H., Li, D.F., Abrahams, J.P., *A Straightforward and Robust Method for Introducing Human Hair as a Nucleant into High Throughput Crystallization Trials*, *Crystal Growth & Design*, vol. 11, no. 4, pp. 1170-1176.

2010

Liu, Z.F., Jiang, L.H., Galli, F., **Nederlof, I**., Olsthoorn, R.C.L., Lamers, G.E.M., Oosterkamp, T.H., Abrahams, J.P., *A Graphene Oxide center Streptavidin Complex for Biorecognition - Towards Affinity Purification*, *Advanced Functional Materials*, vol. 20, no. 17, pp. 2857-2865