

CURRICULUM VITAE

Dr Radosav S. Pantelic

DOB 3.SEP.1982

UK/EU & Australian citizenship, Swiss B permit, US J-1 VISA.

Interests: Musician, Balkan/Slavic/Greek culture, Cycling, Hiking, Weightlifting, Research and Technology

Travel: UK, Australia, Germany, Austria, Switzerland, France, Ukraine, Netherlands, USA, Spain, Greece, Italy,

Forward

I am passionate about research and innovation, whether it be in an academic or industrial environment, my search to acquire new and diverse skills is a constant source of challenge and satisfaction.

During my PhD I made the transformation from software engineering to structural biology, becoming proficient in Cryo-EM/Electron Microscopy and Single Particle Analysis (SPA). My doctorate (Institute for Molecular Bioscience, University Queensland, Australia) concluded with the first structure (sub-nanometer, Cryo-EM) of an Ovine Adenovirus approved for clinical trials as a gene vector in the treatment of prostate cancer.

As part of my first postdoctoral position I once again reinvented myself, working as the “bridge” in a collaboration between the Max Planck Institute (MPI, Martinsried, Germany) and FEI (<http://www.fei.com>) to further develop and debug the first prototype of the Titan KRIOS - currently the highest resolution electron microscope in the world. I worked directly with FEI R&D as an applications specialist and on-site engineering support over a period of some years. Hence, I have intimate knowledge of the KRIOS design and familiarity with sample handling mechanics at liquid nitrogen temperature, electron optics and high-vacuum systems.

In Switzerland (C-CINA, University Basel, Switzerland) I continued my own research into the development of graphene (initiating collaborations with leaders in the field: Rodney Ruoff, University of Texas at Austin, USA; Ute Kaiser, University Ulm, Germany; Jannik Meyer, University Vienna, Austria; Christian Schoenenberger, University Basel, Switzerland) as an advanced method in EM sample preparation and have been leading its development since. During this time I also implemented and applied a high-throughput workflow for the structural determination of SPA maps, used in the docking of crystallographic subunits (a collaboration with Nicolas Thoma, Friedrich Miescher Institute, Switzerland). Three 20Å maps, each determined in as little as one month (final data acquisition and processing) are part of a currently unpublished manuscript pending submission.

I am currently posted at the National Institutes of Health (NIH, Bethesda, MD) where I am working with novel methodology in Cryo-EM (continuing my research into graphene applications) and the structural studies of HIV-1 Reverse Transcriptase (RT). I am focused on constantly learning and acquiring new and diverse skills in emerging technologies/fields, and making solid contributions to their advancement.

Education/Training

- i. **Bachelor Science**,
University of Queensland (2004), Computer Science/IT
- ii. **Bachelor Science Honors (First class)**,
University of Queensland - Institute for Molecular Bioscience (2004), Structural & Computational Biology - Prof. Ben Hankamer, Dr Brad Marsh, Dr Geoffrey Erickson
- iii. **PhD (Australian Postgraduate Award fellow)**,

University of Queensland - Institute for Molecular Bioscience (2008): Structural Molecular Biology - Prof. Ben Hankamer, Dr Nick Hamilton, Dr Geoffrey Erickson.

- iv. **TEM Autoloader service engineer training**,
FEI Company (2009), The Netherlands
- v. **TEM Advanced Autoloader service engineer training**,
FEI Company (2010), The Netherlands
- vi. **TEM Fundamental service engineer training**,
FEI Company (2012), The Netherlands
- vii. **TEM Titan service engineer training**,
FEI Company (2012), The Netherlands

Proficiencies/Experience

- i. **Electron Microscopy:** *Vitreous and negatively stained sample preparation (Cryo-EM), Transmission Electron Microscopy (TEM), Tomography, TEM technology and development, TEM maintenance and optimisation.*
- ii. **Image processing:** *Development of image processing algorithms (Real-space & Fourier), Single Particle Analysis/Reconstruction (SPA), Data optimisation*
- iii. **Programming:** *C/C++, Java, Visual Studio, C#, .NET, Matlab, Embedded micro-controllers, SQL, Relational databases*
- iv. **Engineering:** *Computer Aided Drafting & Design, CNC Manufacture, Design of basic electronic circuits/systems, Tool design for Cryo-Electron microscopy, Specialised scientific apparatus design and development*

Positions

- i. **(2005-2006) Postgraduate Research Assistant**
University of Queensland - Institute for Molecular Bioscience (IMB).
Image processing algorithms for automated cell phenotype classification.
Dr Nicholas Hamilton, Prof. Rohan Theasdale
- ii. **(2008 & 2009) Postdoctoral fellow**
Max Planck Society - Max Planck Institute for Biochemistry (MPIB) & FEI Company.
Further development of Titan KRIOS prototype in collaboration with FEI R&D.
Prof. Wolfgang Baumeister (MPIB), Dr Juergen Plitzko (MPIB), Dr Raymond Wagner (FEI), Dr Raymond Schrijver (FEI), Martin Verhijn (FEI)
- iii. **(2009-2011) FEI Titan KRIOS fellow**
FEI Company R&D Division, Netherlands.
FEI collaboration, refinement of Titan KRIOS design and Software.
Dr Raymond Wagner, Dr Raymond Schrijver, Martin Verhijn
- iv. **(2010-2012) Postdoctoral fellow/Professional Associate**
University of Basel - Centre for Cellular Imaging & Nano-Analytics (C-CINA).
Further FEI collaboration. Novel methodology in Cryo-EM.
Prof. Henning Stahlberg (C-CINA)
- v. **(September 2012- July 2013) NIH Postdoctoral fellow**
National Institutes of Health (NIH) - National Cancer Institute (NCI).
Novel methodology in Cryo-EM & structural studies of HIV-1 reverse transcriptase.
Prof. Sriram Subramaniam (NCI/NIH)

- vi. **(July 2013 - June 2014) IMBB-FORTH Postdoctoral fellow**
Institute for Molecular Bioscience and Biotechnology (IMBB) - Foundation for Research and Technology Hellas (FORTH). *Acquiring skills and experience in X-Ray crystallography as part of InnovCrete/REGPOT project. Advising on TEM capabilities and facility upgrade. Praxi/Help-Forward start-up collaboration.*
Prof. Mixalis Kokkinidis (IMBB/FORTH/UoC)

Honors

- i. **(2002)** Dean's commendation for high academic achievement
- ii. **(2003)** Research scholarship, University of Queensland - Advanced Computational Modelling centre.
- iii. **(2004)** Research scholarship, University of Queensland - Advanced Computational Modelling centre.
- iv. **(2004)** Honors Thesis ranked highest in Faculty, University of Queensland.
- v. **(2004)** Dean's commendation for high academic achievement
- vi. **(2005)** Research scholarship fellow, University of Queensland - Advanced Computational Modelling centre.
- vii. **(2005)** Australian Postgraduate Award, Full PhD Scholarship.
- viii. **(2010)** *Graphene oxide: A substrate for optimizing preparations of frozen-hydrated samples* - Listed in Journal of Structural Biology most downloaded. Listed in "Top 10" most downloaded for several consecutive months (also at position #3).
- ix. **(2011)** *Graphene oxide: A substrate for optimizing preparations of frozen-hydrated samples* - cited in Nobel Lecture (Novoselov, K. S. (2011). "Graphene: Materials in the Flatland").
- x. **(2011)** *Graphene: Substrate preparation and introduction* - Listed in Journal Structural Biology most downloaded.
- xi. **(2011)** Invited to contribute review on Graphene to special edition of Solid State Communications (published Spring 2012).
- xii. **(2011)** *Oxidative doping enables the use of graphene as support in biological TEM* - Highlighted by the Swiss Chemical Society.
- xiii. **(2013)** Invited speaker at National Institute of Standards (NIST)
- xiv. **(2013)** Invited speaker at Gordon research conference on 3D electron microscopy
- xv. **(2013)** HR-TEM sequence of atomic graphene lattice featured in National Geographic documentary "Mysteries of the unseen world" (f/k/a "Hidden Worlds" and "Hidden Universe")

Peer-reviewed primary publications

- i. Pantelic, R.S., Rothnagel, R., Muller, D., Woolford, D., Landsberg, M.J., McDowall, A., Pailthorpe, B., Young, P.R., Banks, J., Hankamer, B., et al. (2006). The discriminative bilateral filter: an enhanced denoising filter for electron microscopy data. *Journal of Structural Biology* 155, 395-408.
- ii. Pantelic, R.S., Ericksson, G., Hamilton, N., and Hankamer, B. (2007). Bilateral edge filter: Photometrically weighted, discontinuity based edge detection. *Journal of Structural Biology* 160, 93-102.
- iii. Pantelic, R., Lockett, L., Rothnagel, R., Hankamer, B., and Both, G. (2008). Cryoelectron microscopy map of Atadenovirus reveals cross-genus structural differences from human adenovirus. *Journal of virology* 82, 7346.
- iv. Pantelic, R., Meyer, J., Kaiser, U., Baumeister, W., and Plitzko, J. (2009). Graphene oxide: A substrate for optimizing preparations of frozen-hydrated samples. *Journal of Structural Biology* 170, 152-156.

- v. Pantelic, R.S., Suk, J.W., Magnuson, C.W., Meyer, J.C., Wachsmuth, P., Kaiser, U., Ruoff, R.S., and Stahlberg, H. (2011). Graphene: Substrate preparation and introduction. *Journal of Structural Biology* 174, 234-238.
- vi. Pantelic, R.S., Suk, J.W., Hao, Y., Ruoff, R.S., and Stahlberg, H. (2011). Oxidative doping renders graphene hydrophilic, facilitating its use as a support in biological TEM. *Nano Letters*.
- vii. Pantelic, R.S., Meyer, J.C., Kaiser, U., Stahlberg, H. (2012). The application of Graphene as a sample support in transmission electron microscopy. *Corrected Proof, In press*.
- viii. Pantelic, R.S., Fu, W., Schoenenberger, C., Stahlberg, H. (2013). A convenient method for rendering graphene TEM supports hydrophilic through non-covalent aromatic functionalization. Submitted to *Journal of Structural Biology*.

Other publications

- i. Hamilton, N., Pantelic, R., Hanson, K., Fink, J.L., Karunaratne, S., and Teasdale, R.D. (2006). Automated sub-cellular phenotype classification: an introduction and recent results. *Proceedings of the 2006 workshop on Intelligent systems for bioinformatics-Volume 73*, 67-72.
- ii. Hamilton, N.A., Pantelic, R.S., Hanson, K., and Teasdale, R.D. (2007). Fast automated cell phenotype image classification. *BMC Bioinformatics* 8, 110.
- iii. Woolford, D., Ericksson, G., Rothnagel, R., Muller, D., Landsberg, M.J., Pantelic, R.S., McDowall, A., Pailthorpe, B., Young, P.R., Hankamer, B., et al. (2007). Swarm(PS): Rapid, semi-automated single particle selection software. *J Struct Biol* 157, 174-188.
- iv. Abeyrathne, P.D., Chami, M., Pantelic, R.S., Goldie, K.N., and Stahlberg, H. (2010). Preparation of 2D crystals of membrane proteins for high-resolution electron crystallography data collection. *Meth Enzymol* 481, 25-43.

Presentations

- i. (2007) 4th Scientific meeting of the Australian Virology Group, Selected talk.
- ii. (2010) 8th International NCCR Symposium on New Trends in Structural Biology, Poster presentation.
- iii. (2011) 9th International NCCR Symposium on New Trends in Structural Biology, Poster presentation.
- iv. (2011) Gordon conference: Three Dimensional Electron Microscopy, Poster presentation.
- v. (2011) FEI KRIOS User meeting, Invited talk.
- vi. (2013) National Institute of Standards and Technology (NIST): Invited speaker
- vii. (2013) Gordon conference: Invited speaker
(<http://www.grc.org/programs.aspx?year=2013&program=threedim>)