Personal details

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I am a physicist with a strong computer science background. Both, my masters and PhD were in experimental nano science and my latest project in computer science using neural nets. I also have professional experience in team leadership roles and strategic planing of projects. I am very passionate about working in teams and together driving positive and impactful project outcomes.

Professional experience

July 2015 - November 2016 **IBM Research Australia**, Melbourne (AUS)
Staff Researcher

As a potential future leader of IBM Research Australia I was given a permanent position as a Staff Researcher. Restructuring of the Research Lab meant a stronger focus on healthcare, dissolving the natural resources efforts. I moved into the cognitive analytics team driving the agenda of deep learning in the healthcare and finance sectors. This involved up skilling to machine learning. I focused on neural networks and worked on semantic image labelling of optical coherence tomography data of arteries with stents. As a continuing member of the 'Invention Disclosure Team' team I helped to improve the labs innovative output and mentoring others.

July 2013 - June 2015 **IBM Research Australia**, Melbourne (AUS)
Postdoctoral Research Scientist

I initially joined IBM Research Australia to work in the Bionanosensor team, setting up the experimental facilities and helping to develop the strategic plan of the project. However as this project moved back to IBM Research Yorktown I moved in the nanotechnology in natural resources team taking over the leadership of this team. Following this, I was enrolled in the IBM emerging talent program to help unfold my potential in this role. This team leadership role involved strategic planning across the Australia Research Lab, collaboration with global labs as well as working closely with clients. I successfully developed trustful relationships with clients by listening and understanding their needs and proposing research projects. This resulted in signing a 'Joint Study Agreement' with Metso to study the froth flotation process. I also contributed technically studying nanoscale systems with molecular dynamic simulations. During this period I was appointed a member of the 'Invention Disclosure Team' to help drive the labs innovation output.

February 2013 - April 2013 **University of Melbourne**, Melbourne (AUS)
Research Assistant in Prof. Mulvaney's group

In my role as a research assistant I was responsible training new users in the techniques and application of various instruments which I built and developed during my time as a PhD student. It also involved knowledge transfer helping to formulate new research questions and projects.

January 2008 - March 2008 **Max-Planck Institute for Extraterrestrial Physics**, Munich (GER)
Research Student in Dr. Predehl's group
Testing X-Ray Detectors for the eROSITA project

June 2007 - September 2007 **University of Hawaii**, Honolulu (US)
Research Project for Undergraduates in Prof. Kudritzki's group
Analyzing spectra of supergiants to determine their metallicity

October 2006 - February 2007 **Walther Meissner Institute**, Munich (GER)
Research Student in Prof. Hermann's group
Designing a temperature controlled chamber for STM measurements

July 2006 - September 2006 **University of Southampton**, Southampton (UK)
Research Student in Prof. Pavlos Lagoudakis's group
Setting up a temperature dependent TCSPC set-up, measuring energy transfer from QDs to a quantum well

March 2005 - April 2005 **Max-Planck Institute for Plasma Physics**, Munich (GER)
Research Student in Prof. Zohm's group
Simulation and Analysis of the temperature profile in the Tokamak ASDEX

November 2002 - January 2005 **Siemens**, Munich (GER)
Student Placement
Testing work capacity of MOSFETs

July 2002 - September 2002 **Siemens**, Beeston (UK)
Student Placement
Translating a phone user interface

Education

June 2009 - February 2013 **PhD in Physics,** University of Melbourne, Melbourne (AUS)
Nanoparticle Group (Prof. Mulvaney)

Thesis Title: **The effects of External Fields on the Optical Properties of Nanocrystals.** Excitonics and plasmonics are exciting fields in nano science due to the outstanding optical properties evolving in the nanometer scale of semiconductor and metal materials. This makes nanocrystals promising candidates for applications like for example LEDs, solar cells and bio labels, however their optical properties are not fully understood yet. In my thesis I focused on CdSe/CdS/ZnS and gold nanocrystals. In order to further understand their optical properties I constructed a widefield microscope where I was able to apply different atmospheres to the samples, showing there is a strong correlation between the atmosphere and the optical behaviour of nanocrystals. This was confirmed and further studied using a confocal microscope allowing single nanocrystal exciton lifetime measurements. Furthermore, I developed techniques to overlap widefield/darkfield images with atomic force microscope images and scanning electron images to gain insights in the structural dependence on the optical properties. I also developed devices with which I was able to apply electric fields to single nanocrystals and ensembles in order to study charging effects on nanocrystals.

November 2002 - March 2009 **Master in Physics,** Ludwig-Maximillian's University, Munich (GER)
Photonics and Optoelectronics Group (Prof. Feldmann)

Thesis Title: **Size dependent Luminescence of Semiconductor Nanocrystals.** Nano science creates a wealth of new materials, during my master degree I investigated size dependence on the properties of semiconductor tetrapods using a widefield setup with a cryostat sample chamber.

September 2005 – March 2006 **ERASMUS Scholar,** University of Seville, Seville (ESP)
Coursework in Physics

Professional Development

August 2016	JavaScript Basics – Udacity Course
August 2016	Intro to HTML and CSS – Udacity Course
July 2016	Web Development – Udacity Course
June 2016	Software Development Process - Udacity Course
October 2015	Deep Learning Course
July 2015	Python Course – University of Melbourne
March 2015	IBM Emerging Leaders – Leading High Performance
March 2015	IBM Emerging Leaders – Strategy and Finance for Leaders
October 2014	IBM Emerging Leaders – Leading Relationship
August 2014	MD Workshop – University of Melbourne
March 2014	Leadership in a Project Team Environment -IBM
October 2013	Creativity, Innovation and Change - Coursera Course
September 2013	Virology I – How viruses work - Coursera Course
August 2013	Drug Discovery, Development & Commercialization - Coursera Course
July 2013	Cell Biology - Coursera Course

Publications & Patents

S. Rohrmoser, J. Baldauf, S. Sapra, A. Eychmüller, I. M. Watson, R. T. Harley and P. G. Lagoudakis *"Temperature Dependence of Exciton Transfer in Hybrid* Quantum *Well/Nanocrystal Heterostructures"*, Applied Physics Letters 91 (2007)

C. Mauser, E. Da Como, J. Baldauf, A. L. Rogach, J. Huang, D. V. Talapin, and J. Feldmann "*Spatio-temporal dynamics of coupled electrons and holes in nanosize CdSe-CdS semiconductor tetrapods"* Physical Review B 82 (2010) (Selected for the Virtual Journal of Nanoscale Science and Technology 22 (2010) and the Virtual Journal of Ultrafast Science 9 (2010))

B. Mashford, J. Baldauf, T. Nguyen, A. Funston and P. Mulvaney
"Synthesis of Quantum Dot Doped Chalcogenide Glasses – via Sol-gel Processing"
Journal of Applied Physics 109 (2011)

Antonello, E. Della Gaspera. J. Baldauf, G. Mattei and A. Martucci
"Improved thermal stability of Au nanorods by use of photosensitive layered titanates for gas sensing application" Journal of Materials Chemistry (2011)

E. Della Gaspera, M. Karg, J. Baldauf, J. Jasieniak, G. Maggioni and A. Martucci,
"*Au Nanoparticle Monolayers Covered with Sol Gel Oxide Thin Films: Optical and Morphological Study*" Langmuir (2011)

S. Barrow, X. Wei, J. Baldauf, A. Funston, and P. Mulvaney
"The Self-Assembly and Plasmon Modes of Three dimensional Gold Tetramers, Pentamers and Hexamers" Nature Communications 3 (2012)

S. Murphy, K. Boldt, J. Baldauf and P. Mulvaney
"Effect of different atmosphere on the QD luminescence" Submitted to Nano Letters

J. Baldauf, A. Makarucha, M. Downton and G. Yiapanis
"Fullerene-fullerene interactions in water: A molecular dynamic study" Submitted to J. Phys. Chem. C

G. Yiapanis, A. Makarucha, J. Baldauf and M. Downton
"Fullerenes and their hydrophobic characteristics: A molecular dynamics study" Submitted to Nanoscale

J. Baldauf, C. Schieber and S. Harrer
"Directed surface functionalization on selected surface areas of topographical features with nanometer resolution" 10/15/2013 filed as Docket YOR920130807US1 in US

J. Baldauf, C. Schieber and S. Harrer
"Nano fluidic sensor comprising spatially separated functional sensing components"
10/15/2013 Filed as Docket YOR920130891US1 in US

J. Baldauf, C. Schieber, S. Harrer and J. Wagner
"Tunable piezo-driven sieve consisting of a multi-nanopore chip"
08/07/2014 published in Technical Disclosure Bulletin

J. Baldauf, M. Downton, N. Gunn, S. Harrer, S. Kannam, C. Schieber, J. Wagner
"Detection of translocation event using grapheme-based nanopore assemblies"
06/26/2014 Filed as Docket YOR920140181US1in US

J. Baldauf, A. Bojovschi, and S. Moore
"Engulfed nano/micro bubbles for improved recovery of large particles in a flotation cell"
07/14/2015 Filed as Docket YOR920140437US1in US

J. Baldauf, C. Schieber, P. Rogers, A. Bojovschi, and S. Moore
"Nanobubbles for enhanced interaction between solids and gas volumes"
Filed as Docket YOR920150002US1 in US

J. Baldauf, D. Beurle, M. Downton, S. Moore, C. Schieber, G. Yiapanis
"Flowfield sensors for monitoring liquid flow"
09/07/2015 Filed as Docket YOR920150333US1 in US

J. Baldauf, C. Schieber, A. Bojovschi, B. Mashford, G. Yiapanis, M. Downton
"Froth flotation with anisotropic particle collectors" Filed as Docket YOR920151300US1 in US

J. Baldauf, A. Bojovschi, B. Mashford, G. Yiapanis, A. Makarucha
"A system and method for gold deposit identification"
02/11/2016 published in Technical Disclosure Bulletin

J. Baldauf, B. Mashford, A. Makarucha
"Real-time detection of emergency situations via cognitive analysis of audio data streams"
01/11/2016 published in Technical Disclosure Bulletin

J. Baldauf, B. Mashford, J. De Hoog, K. Abdulla
"Optimal distributed energy resource management system" Filed as Docket YOR920160837US1 in US

Awards & Scholarships

July 2016	Professional Fellowship with Pollinate Energy
May 2016	IBM High Value Patent Application Award
March 2016	IBM Third Patent Plateau Award
August 2015	IBM Second Patent Plateau Award
June 2014	IBM First Patent Plateau Award
March 2014	IBM Emerging Talent Program
June 2012	Australian Nanotechnology Network (ANN) Young Nanoscience Ambassador Award
June 2011	University of Melbourne Overseas Research Experience Scholarship

June 2009	University of Melbourne International Postgraduate Research Scholarship and Science Faculty Scholarship
May 2007	German Academic Exchange Service (DAAD) Travel Scholarship
May 2007	Research Experiences for Undergraduates (REU) Scholarship
September 2005	ERASMUS Travel Scholarship
April 2004	Wilhelm and Else Hereaus Foundation Travel Award
October 2002 - March 2009	Siemens Young Ladies of Technology Network Member (YOLANTE)

Volunteer & Representative Work

April 2017	Guest Program Lead at Pollinate Energy in India
October 2016	Young Professional Fellow at Pollinate Energy in India
September 2016	Organised IBM Research's involvement at EXITE Camp
July 2016	Joined VR Hackathon on urban sustainability in Melbourne
January 2016	Volunteer for "ICT in schools" program
October 2015	Helped organising a 'Second to give' fundraiser event
September 2015	Organised IBM Research's involvement at the EXITE Camp
April 2015	Volunteer in Nepal for Journey to Nepal Organisation
May2014/May 2015	Volunteer for Foundation of Young Australians
September 2014	Presented at the IBM EXITE Camp
November 2013	Volunteer for Residential Indigenous Science Experience
June 2011	Volunteer at BIO21 Open Day (Nanotechnology Stand)
October 2011 - 2013	Volunteer for "Scientist in Schools Program" of CSIRO
September 2011	Organizer of a Careers Expo for undergraduate students
April 2011 - April 2012	President - Chemistry Postgraduate Society
October 2010	Postgraduate Student Representative at School of Chemistry Retreat
August 2010	Volunteer at Open Day of the University of Melbourne
August 2010	Representative at Nanotechnology stand at Herald Sun Home and Garden Expo
June 2010	Postgraduate Student Representative at School of Chemistry Planning Day
Since May 2010	Australian Nanotechnology Network Member
April 2010 - April 2011	Treasurer - Chemistry Postgraduate Society
August 2009 - April 2012	Chemistry Postgraduate Society Member
Since February 2007	Deutsche Physikalische Gesellschaft Member

Technical Skill Set

Computational: Python, C++, Bash, Machine Learning (Tensorflow), Molecular Dynamics Simulations (Lammps, Colvars), VMD, Computational Fluid Dynamics (OpenFOAM), Software (Igor, Latex, Labview, Open Office Programs, Lotus Notes, Adobe Illustrator, Github), Operating Systems (Mac, Linux, Windows), Google App Engine, HTML, CSS, JavaScript

Experimental: Scanning Electron Microscopy, Focused Ion Beam Etching, Metal and Semiconductor Nanocrystal Synthesis, Sol-gel Processing, Thermal Evaporation, Sputter Coater, Photo-lithography, Clean Room Procedures, Glovebox/Schlenkline Procedures, Atomic Force Microscopy, Zeta-Potential Analyzer, I-V/FET Measurements, Absorption/Fluorescent Spectroscopy, Lifetime Measurements (Streak Camera, TCSPC, Pump-Probe, Flashphotolysis), Widefield Spectroscopy, Confocal & Darkfield Single Particle Spectroscopy, Cryostat Procedures

Interpersonal Skills:

- Establishing and managing collaborative research projects with an aim to build synergies
- Excellent communication skills (thesis, scientific journals and presentations)

- Hands-on experience in teaching, demonstrating to others, mentoring and public speaking
- Managing multiple tasks concurrently
- Working independently or within a team, including interdisciplinary collaborations
- Fast learning and aptitude
- Ability to develop excellent working relationships with a diverse range of people
- Passion for ongoing learning and a strong belief in always applying myself to my personal best
- Self-motivated with enthusiasm and energy to achieve career goals
- Logical, dynamic, entrepreneurial thinker with strong analytical and research skills
- Excellent problem solving skills due to a holistic and provident thinking approach
- Managing projects according to time, budget and performance
- Optimistic attitude towards life in general
- Taking initiative in creating a social atmosphere at work to enable high performing teams
- Respecting diverse opinions and seeking to understand other peoples motivations

Languages

German (native), English (fluent), Spanish (good), French (basic)

Other Interests

Rock climbing, Beach volleyball, Mountaineering, Yoga, Reading, Traveling, Sustainable Living, Gardening

Referees

Prof. Paul Mulvaney, Group Leader - Nanoparticle Group University of Melbourne
2/30 Flemington Road, Parkville VIC 3010, +61-3-8344-2405, mulvaney@unimelb.edu.au

Dr. Juerg van Kaenel, Associate Director of IBM Research Australia
5/204 Lygon Street, Carlton VIC 3053, +61-2-, jvk@au1.ibm.com

Additional references available on request.