

Curriculum Vitae Petra de Jongh

Personal details

Name: Petra E. de Jongh
Date and place of birth: 20 Februari 1971, Utrecht
Nationality: Dutch (The Netherlands)
ResearcherID: [A-4761-2009](#)

Master's ('doctoraal')

University/College of Higher Education: Utrecht University, the Netherlands
Date: 28 August 1995 (*cum laude*)
Study: Chemistry
Main subject: Physical Chemistry/Condensed Matter

Doctorate

University/College of Higher Education: Utrecht University, the Netherlands
Date: 27 September 1999 (*cum laude*)
Supervisor (promotor and copromotor): Prof. J.J. Kelly, Prof. D.A.M. Vanmaekelbergh
Title of thesis: "Photoelectrochemistry of Nanoporous Semiconductor Electrodes"

Work experience since completing PhD

Research Scientist, later Senior Scientist and Project leader at Philips Research

Eindhoven, The Netherlands, 1999-2004 (1.0 fte, permanent position)

Topic: Nanocomposite, inorganic thin films for several applications
Activities: Project management, research, fund acquisition, facilitating implementation, communication with Philips Business Units

Research and implementation scientist at Philips DAP Singapore

September 2002-December 2002 (1.0 fte, permanent position):

Topic: Nanocomposite coatings to improve the performance of steam irons

Assistant (2004-2009) and Associate (2009-2014) Professor at Utrecht University

2004- 2014 group Prof. K.P. de Jong, Inorganic Chemistry and Catalysis (1.0 fte, permanent position)

Current position

Since 2014 I am full professor and chair of the group Inorganic Nanomaterials at the Debye Institute for Nanomaterials Science (Utrecht University, The Netherlands). I investigate nanostructured inorganic materials (typically nanoparticles in mesoporous supports), to gain insight in the impact of particle size, confinement and pore structure on the functionality of these materials for applications in catalysis and energy conversion/storage.

Research interests

I started working in the group of Inorganic Chemistry and Catalysis in 2004, first focussing on supported catalyst preparation, a fruitful and ongoing collaboration with Prof. K.P. de Jong. My expertise is specifically the use of ordered mesoporous supports as model systems to facilitate fundamental studies on catalyst preparation, nanostructure and functionality. An example of my recent research interest is the stability of supported nanoparticles under dynamic conditions, a key aspect for many applications that is often underrated in academic research. A large NWO-Vici project started in 2014, and first results already led to a Nature Materials paper. Additionally I have a strong interest in designing new catalyst (specifically bimetallics and promoted nanoparticles) for the renewable production of fuels and chemicals, a research line that is reinforced by a recently acquired ERC Consolidator Grant.

Another important research line is the use of inorganic materials for energy storage and conversion. Based on an NWO-Vidi grant and additionally acquired funds, I formed a research team and built advanced infrastructure to study nanoconfined light metal hydrides for reversible hydrogen storage.

Presently this line of research expands in new directions, looking at fast solid-state ion conductors for all solid-state lithium ion batteries, solar fuels, and the conversion of CO₂ and sustainable hydrogen into fuels and chemicals via photo- and electrocatalysis.

Worldwide recognition of the quality of my research is reflected in invited lectures at international conferences, invited papers and book chapters, my network of international collaborators, and a rapidly growing number of citations. I have firmly established myself as an independent scientist, also capable of leading a team of excellent young researchers.

Research output

Publications	~125 scientific articles	7 book chapters	15 patent (applications)
Citations	~4300 (10% selfcit)	h-index=35	~700/year
Presentations	10-15 international lectures/year		5-10/year upon invitation
Supervision	23 PhD-candidates (11 currently)		14 postdocs (1 currently)

Staying abroad

- September 1992- April 1993: *University of Kent in Canterbury, (UK)*
Research project on the conductivity in doped alkali borate glasses (with Prof. A.V. Chadwick), also EXAFS measurements in Daresbury (UK)
- April-August 1995: *Institut für SolarenergieForschung, Hannover, Germany*
Contract research project on the photoelectrochemical degradation of p-Arsanilic acid (with dr. D. Meissner)
- September 2002-December 2002, *Philips DAP Singapore*
Research and implementation project on nanocomposite coatings to improve the performance of steam irons
- Since 2004: Several short research visits such as to CNRS-ICMPE (Paris, France), i-Nano (Aarhus Denmark), IFW (Dresden, Germany), and LSU (Baton Rouge, USA)
- Since 2006 I measured at several beamlines such as ESRF (Grenoble, France) and DESY-HASYLAB (Hamburg Germany).
- June-July 2013: Invited visiting professor at the Université Pierre et Marie Curie (Paris, France)

International research collaborators (with whom I recently published or filed a joint proposal, selected examples)

Xinhe Bao (State Key Laboratory of Catalysis, Dalian, China), Christian Chmelik (Leipzig University), Marc Conradi (Washington University, USA), Jan Embs (Paul-Scherrer Institute, Switzerland), Francois Fajula (ICG, Montpellier, France), Bart Goderis (university of Liege, Belgium), Cedric Gommès (University of Liège, Belgium), Oliver Gutfleish (IFW Dresden, Germany), Chris Hardacre ((Queens University of Belfast), Stig Helvegg (Haldor Topsoe, Denmark), Bahai Jagirdar (Indian Institute of Science, Bangalore India), Jörg Kärger (Leipzig, Germany), Challa Kumar (CAMD, Baton Rouge, USA), Catherine Louis (UPMC, Paris, France), Eric Majzoub (University of Missouri, USA), Alexander Neimark (Rutgers, State University of New Jersey, USA), Steve Pollington (Johnson Matthey, UK), Arndt Remhof (EMPA, Switzerland), Jerry Spivey (LSU, Louisiana, USA), Pascal van der Voort ((University of Liege, Belgium)), Tejs Vegge, Didier Blanchard (DTU Denmark)Eelco Vogt (Albemarle catalysts), Bart Zwijnenburg (Johnson Matthey, Emmerich, Germany), Andreas Züttel (EMPA, Switzerland)

International presentations

~100 international presentations, of which 40 invited/keynote presentations. Presently 10-15 international presentations (5-10 invited/keynote) per year (presentations given by my postdocs/PhD-candidates are not included in these numbers).

Other academic activities

Involvement in the organisation of conferences (selection):

- Member Scientific Board European Materials Research Conference (Warsaw, September 2016)
- Invited Session leader at the Gordon conference on Catalysis June 2014, New London (New Hampshire) USA
- Abstract Selection International Catalysis Conference in Beijing (August 2016)
- Co-organiser CatPrep European Summer School on Catalyst Preparation, May 2014, Vogue (France), and the 2nd edition in 2016
- Chairing a Session “Catalyst Design and Synthesis” at the 23rd NAM (North American Meeting), June 2013, Louisville (KY, USA)
- Selection abstracts for the session “New concepts in Catalyst Design and Preparation”, XIth European Congress on Catalysis, September 2013, Lyon (France)
- Organiser MRS Spring Meeting 2012 Symposium P: “Advanced Materials and Nanoframeworks for Hydrogen Storage and Carbon Capture” (April 2012, San Francisco, CA, USA)
- Netherlands Catalysis Conference, Regular organiser of sessions such as “Microporous and Mesoporous Materials” (2010), “Theory and 3D Model Catalysts (2016)
- Gordon Conference on Metal-Hydrogen Systems 2011, chair of the session “Hydrogenation and Dehydrogenation in Nanoconfined Materials” (July 2011, Easton, MA, USA)
- ACS Spring Meeting, Session Chair Hydrogen Storage Materials, March 2011, Anaheim, USA)
- HYDROGEN, Session Chair (November 2010, Noordwijkerhout, the Netherlands)
- 6th International Mesostructured Materials Symposium, session chair (September 2008, Namur, Belgium)

Boards and Committees:

- Scientific Advisory Board of the Helmholtz Institute - Berlin, Germany (2016-to date)
- International Energy Agency Task 32 – “Hydrogen Based Energy Storage” (2013-to date)
- Programme Committee “Fund New Chemical Innovation”(the largest private-public funding in the field of Chemistry in the Netherlands)
- Board of the national working group “Chemistry and Structure of Materials (2016-to date)
- Advisory Board Catalysis and Processes TNO (Large Semi-public Dutch Research and Development Organisation) (2014-to date)
- International Scientific Advisory Board of the 6th Forum on New Materials, June 2014, Montecatini Terme (Italy)
- NWO -Vidi jury committee – division Chemical Sciences (2012-2013)
- Management Committee of European COST Action “Nanostructured Materials for Solid State Hydrogen Storage” (2011-2015)
- Board of Studies of the Graduate School of Natural Sciences at Utrecht University (since 2011)
- Executive Board of the US-DOE EFRC consortium “Center for Atomic-Level Catalyst Design” (2010-2015)
- Research Advisory Board of the Department of Chemistry at Utrecht University (2010-2014)
- Board NWO-ACTS national Sustainable Hydrogen program committee (2008-2014)
- Project partner of the International Research Training Group “Diffusion in Porous Materials” (DFG and NWO sponsored) (2008-2013)

Teaching (selection):

- Program Director for the MSc program “Nanomaterials - Chemistry and Physics” at Utrecht University (2011-2014) (elected best Chemistry MSc program in 2014)
- Developed and coordinated an interdisciplinary minor “Nanomaterials” at Utrecht University (2005-2011)
- Teaching in European MSc and PhD courses such as “Structural Materials” in Helsinki (Finland) 2010, Hydrides as Energy Materials (Aarhus Denmark, 2016), etc.
- Teaching several BSc, MSc and PhD courses, including Nanomaterials, Adsorption and Kinetics, Inorganic Chemistry, Material Synthesis.
- Tutor for Chemistry students, developed and coordinates the interdisciplinary minor “Nanomaterials” at Utrecht University.
- Organised a 3-day PhD course “Nanomaterials for Sustainable Energy” for the Debye Institute for Nanomaterials Science (2008, 100 PhD candidates), co-organised “High Tech Systems and Materials” for the Debye Institute for Nanomaterials Science (2006) and “Energy Materials (2016)
- Codeveloped a high school (NLT) module “Nanomaterials” (2008),
- Tutor for Utrecht University BSc Chemistry Students (since 2007)
- Taught at the international NIOK PhD course “Preparation heterogeneous catalysts” (Schiermonnikoog) 2009)

Other Outreach (selection):

- I regularly collaborate with journalists (Michiel van Nieuwstadt, Liesbeth Koenen, Rijkert Knoppers, Hester van Santen) on newspaper articles for NRC Handelsblad, Volkskrant and Trouw (Dutch Quality Newspapers) discussing topics related to hydrogen and sustainable energy (since 2006), as well as for popular Scientific Magazines such as Quest and C2W
- I regularly give classes and demonstrations at high schools and for the general public (“Wetenweek”, “Betadag”, “Open dag Universiteit Utrecht”, Christelijk Gymnasium Utrecht, Koninklijke Nederlandse Vereniging voor de Natuurkunde –Diligentia, UU Alumni...)
- Coach for young Utrecht University staff members (2016-to date)
- Chair of the Utrecht University training committee for the faculties of Natural Sciences and Geosciences for applications for NWO-Vici grants (2013,2014) and ERC grants (2015-to date)
- Participant and discussion leader regarding the Nationale Wetenschaps Agenda (public discussion on the future of scientific research) in the field of Materials, Energy and Circular Economy (2016)
- Member of the committee to yearly elect the best teacher of Utrecht University (2015-to date)
- Publicity following important publications, for instance 2012-2013: BNR Newsradio, MRS Bulletin, Chemisch Weekblad, Nederlands Tijdschrift voor Natuurkunde, etc.
- NWO Discussion panel “Women in Science” (May 2011), UvA ambassadors day
- “Sustainable Hydrogen: Nanosizing and confinement of Metal Hydrides” Interview in Transacts magazine (January 2011)
- “Poreuze materialen”, KNCV Katalyse workshop voor HBO-ers, Amsterdam November 2010
- Vrouwen in de Wetenschap – Interview Laboratorium Magazine (2010)
- “De Toekomstige Waterstofeconomie”, interview in NRC Handelsblad (Dutch quality newspaper) (2009)
- “Ambitieuze vrouwen – Petra de Jongh”, interview in NWO-Jaarboek Chemische Wetenschappen (2009)
- Lecture at the Junior College Utrecht (gifted high school students), courses “Preparation and Characterization of Nanomaterials”, “Catalysis” and “How does a computer work” (2007-2009)
- “Het Energievraagstuk – welke rol kan waterstof spelen?”, Studium Generale lezing Universiteit Utrecht (april 2009)
- “Nanomaterials for Sustainable Energy”, participation in the NWO symposium “Women in Chemistry”, Den Haag, November 2008

Reviewing:

- Regular reviewer for several journals, among which high impact journals such as:
 - *Nature journals*
 - *Advanced Materials*
 - *Energy and Environmental Science*
 - *ACS Nano*
 - *Angewandte Chemie*
 - *Journal of the American Chemical Society*
 - *Chemistry of Materials*
 - *Nano Energy*
- Regular reviewer for research proposals:
 - National (e.g. NWO-Vidi proposals, ACTS proposals)
 - European proposals (FET open, Marie Curie) and project evaluations
 - European National Proposals (Czech republic, Switzerland, Belgium, France, ...)
 - US: NSF, DOE, NSF projects and Nat. Lab. evaluations
 - Worldwide (Israel, South America)

Grants, awards and scholarships

Grants:

- NWO-ECHO grant (2016)
- ERC Consolidator Grant (2015)
- NWO-Vici grant (2013)
- Aspasia Grant (2009)
- Personal NWO-Vidi national grant (2006)
- NWO Meervoud grant (2005)

Awards and scholarships:

- Many prizes for my PhD-candidates and Postdocs; a selection:
 - Dr. Baira Donoeva invited to attend the 67th Lindau Nobel Laureate Meeting (2017)
 - Marie Curie Grant for Dr. Baira Donoeva (2016)
 - Short Stay PhD Fellowship grant for PhD-candidate Nazila Masoud (2014)
 - Science Spotlight award for PhD-candidate Roy van den Berg (2014)
 - My first Vidi PhD-candidate Peter Ngene was invited to organise the Gordon Research Seminar 2013, won the van Arkel prize for the best PhD thesis 2014-2015, and the best poster prize at the Netherlands Catalysis & Chemistry Conference (2010)
- US DOE EFRC-CALCD Innovation Award (2012)
- Thesis Research Award for Young European Scientists (ESQSEC) (2000, 1500 gulden)
- My PhD thesis was awarded *cum laude* (with honours, best ~10%) (1999)
- Selected Young Researcher to attend the Symposium in Elmau (1997)
- My MSc was awarded *cum laude* (with honours = best ~10%) (1995)