Peter Bouwman (PhD)

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Personal Profile ***EU-National***

I hereby introduce myself as a highly-skilled, outgoing scientist with an international track record of managing customer-focussed R&D projects and spearheading innovative product development. My personal success is attributed to my strong intuition for problem-solving, communication skills and my ability to bring out the best in people. Driven by challenges, I have a natural high pace of working/learning, whilst maintaining attention to detail and a positive 'Can-Do' attitude. Keen on the hands-on approach, I am also competent managing projects as a qualified PRINCE 2 practitioner. My ambition is to expand the scope of my achievements and advance current resource utilisation targeting sustainable business objectives. (*Myers-Briggs type indicator: ENTP*)

Key Skills	Electro-Chemist:	*Nano-Materials, Lithium Batteries, Fuel Cells.*
	Project Manager:	*PRINCE 2 Practitioner + 1.5M£ project delivered.*
	Innovative Team Leader:	*Excellent technical, social and presentation skills.*

Professional Experience ***7 years + prior PhD period (5y)***

Customer Support Engineer **~3 years, 2006 – present**
JOHNSON MATTHEY FUEL CELLS, Swindon, UK *(under director: dr.M.Petch)*
objective: *Customer Relationship Management and Technical Support leading wider team.*

- Identification and tracking of customer requirements as technical liaison.
- Resolving any product issues worldwide to satisfaction, focussing on Asia from 2008-.
- Driving innovative, multidisciplinary ideas into 'hot' commercial products.
- Managing product qualification and coordinating with our internal test facility.
- Facilitator between Research, Development, Operations and Commercial department.
- Health and Safety Representative of the facilities outside production areas.

Strategic Component Engineer **1½ years, 2005 – 2006**
JOHNSON MATTHEY FUEL CELLS, Swindon, UK *(under director: dr.J.Wilkie)*
objective: *Securing Product Supply Chain through internal and external development projects.*

- Managed 'Substrate and Intermediate layer' and 'Phase 1&2 MEA' Milestones (6) of funded DTI 'Automotive Class MEA' program, *on time and under budget of 1.5M£.*
- Delivered low-cost GDL as potential commercial product at 10% of market standard.
- Designed 'Water Management' diagnostic tool, now implemented in testing software.
- Managed team of external (5 people) and internal resources, including summer student.

Development Scientist **6 months, 2004 – 2005**
JOHNSON MATTHEY FUEL CELLS, Sonning-Common, UK *(line manager dr.S.Buche)*
objective: *PEM Fuel Cell Characterisation and Development*

- Assembly, operation and characterisation of large area PEM Fuel Cells (>500cm^2)
- Initiation of Advanced Water Management diagnostics and Test Procedures.

Assistant Research Professor US Naval Academy, MD, USA. **2 years, 2002 – 2004**
NAVAL RESEARCH LABORATORY (Adv. Electrochemical Material), Washington DC, USA
objective: *Catalyst Research & Development for PEM Fuel Cells*

- Synthesis of novel low-Pt catalyst for PEM Fuel Cells (US patent granted)
- Specialist for electrochemical catalyst characterisation and fuel cell operation.
- Realised X-ray analysis of operational PEM Fuel Cell in Synchrotron (Brookhaven, US)
- Designed 100W PEMFC Power System (<1.5kg) for an Unmanned Arial Vehicle (UAV) Achieving WORLD RECORD FLIGHT TIME: ***3Hr 19Min.***

Honours Winner of both the Dutch pre-selection and European 'Student Speech Competition' held at the ECeRS-2001 conference in Brugge (Belgium).

Professional experience continued:

Associate Post-Doc Researcher **3 months, 2002**
MESA+, TWENTE UNIVERSITY (Inorganic Material Science), The Netherlands.

- Development and fabrication of Ionic Conductivity Device using clean room facilities

PhD student (FOM Onderzoeker in Opleiding) **5 years, 1997 – 2002**
PHILIPS RESEARCH EINDHOVEN and TWENTE UNIVERSITY, The Netherlands.
thesis: "Lithium Intercalation in Preferential Sub-micron $LiCoO_2$ Films"

- First to discover principle difference in lattice orientation and its influence on Li diffusion between Pulsed Laser Deposition (PLD) and RF Sputtering of thin $LiCoO_2$ films.
- Correlated theoretical models with Advanced Electrochemical Characterisation
- Developed *in-situ* Small Angle Neutron Reflectivity (IRI Delft, NL).
- Successfully demonstrated prototype of thin-film, all solid-state *'Lithium Micro Battery'*.

MSc. student **10 months, 1996 – 1997**
TWENTE UNIVERSITY (Inorganic Material Science group), Netherlands

- Synthesis and characterisation of (doped) inorganic membranes for gas separation.

Student placement
IMEC (Interuniversity Micro Electronics Center), Leuven, Belgium. **4 months, 1996**

- Study of "Stress-induced Voiding of Passivated Aluminium Interconnects on Chips"

PRO-ANALYZE (Environmental Analysis Laboratory), The Netherlands. **3 months, 1995 + 1996**

- Chemical analysis of (polluted) water quality testing

Education

1997 - 2002	Ph-D on 'Lithium Microbatteries', Prof. P.H.L. Notten and Prof. D.N. Reinhoudt Twente University in collaboration with PHILIPS Research, Netherlands.
1992 - 1997	BSc. and MSc. in **Chemical Technology**, *specialisation*: Inorganic Material Science Inorganic Material Science group, Twente University, Netherlands.
1986 - 1992	High school (VWO), J. Fontanus College, Netherlands.
1983 - 1986	Elementary, Bogor International Expatriate School, Indonesia.

Courses

		period:
2008	**Japanese Language lessons –** company sponsored, UK.	2 h weekly
2007	**Health and Safety –** ROE safety training course, UK.	1 d
2006	**IOSH Managing Safely** – Health and Safety course, UK.	4 d
2006	**PRINCE 2 Practitioner** – Project management course, UK.	1 wk
2005	**Business Awareness Course** – Johnson Matthey, Royston, UK.	2 d
2004	**NRL Workshop Power Sources** for Distributed Autonomous Systems.	2 d
2003	**ONR Workshop** 'Fuel Cells for Undersea Vehicles', Newport (RI) USA.	3 d
2003	**PEM Fuel Cell** meeting, *General Motors*, (NY) USA.	2 d
2003	**Radiation Safety** Training, *NRL* (DC) USA.	1 d
2002	**MEA assembly for PEMFC**, *Los Alamos Labs* (NM) USA.	3 d
2001	**Business Management**, *Nijenrode University*, NLD	1 wk
2001	**Cleanroom + Vacuum Technology** Training, *MESA+*, NLD.	1 wk
2001	**Lithium Battery Research** exchange visit, *Ångström Lab*, SWEDEN.	1 wk
1999	**NATO Electrochemistry** (prof. C. Julien), Sozopol, BULGARIA.	2 wks
1999	**Science and Journalism** Workshop, KNCV, NLD.	2 d
1998	**Advances in Electrochemistry**, dr. B.A. Boukamp, NLD.	1 wk
1997	**Research Planning** Workshop, FOM, NLD.	3 d

Study Tours

1996	"Changes in Colourful Chemistry", SOUTH AFRICA.	4 wks
1999	"Inorganic Processing", GERMANY & SWITERLAND.	1 wk

Extra Curricular

Sports:	Martial Arts: brown belt Wu-Shu practitioner (16y), member Demo-team, board member (5y), Swimming, Snowboarding, Cycling (100km per week).
Hobbies:	Robotics, RC modelling (exploring innovative designs), Electronics, Guitar.

Personalia

Marital Status:	Married, one child.
Date of Birth:	22 July 1974, Cardenas (Tabasco) Mexico.
Nationality:	Dutch
Languages:	Dutch (native), English (fluent), German (good), French (fair), Japanese (basic)
Prof. Associations:	member of the Electro-Chemical Society *(*1997*-present).*

US Patents

- K. S. Lyons, P. J. Bouwman, "Hydrous phosphate catalysts with low platinum," Navy Case No. 84,631, application filed 26 March 2003, accepted 14 Aug 2007: **US 7,255,955B2**

UK Patents

- P. J. Bouwman, D. Barnwell, J. Wilkie, "Process for Preparing a Composite Membrane" **WO 2007/034233 A1**, international filing date 1 August 2006 (PCT/GB2006/050228).

Publications

- Peter J. Bouwman, B.A. Boukamp, H.J.M. Bouwmeester, P.H.L.Notten, H. Verweij, "Structural Analysis of Submicrometer $LiCoO_2$ films", *J. ElectroChem Soc.*, **148** (4) A311-317, (2001).
- Peter J. Bouwman, B.A. Boukamp, H.J.M. Bouwmeester, P.H.L.Notten, "Influence of Diffusion Plane Orientation on Electrochemical Properties of Thin Film $LiCoO_2$ Electrodes", *J. Electrochem. Soc*. **149** (6) A699 (2002).
- Peter J. Bouwman, B.A. Boukamp, H.J.M. Bouwmeester, P.H.L.Notten, "Structure Related Intercalation Behaviour of $LiCoO_2$ Films", *Solid State Ionics*, **152-153** 181-188 (2002).
- Peter J. Bouwman, B.A. Boukamp, H.J.M. Bouwmeester, P.H.L.Notten, "Lithium intercalation in sub-micron $LiCoO_2$ films", *Klei, Glas & Keramiek, Vol.* 5 (2002).
- Peter J. Bouwman, B.A. Boukamp, H.J.M. Bouwmeester, P.H.L.Notten, "Lithium intercalation in preferential $LiCoO_2$ films", *conf. proceedings Electrochem. Soc.*, PV 2002-26, 490, Salt Lake City (2002).
- A.E. Curtright, P.J. Bouwman, R.C. Wartena, and K.E. Swider-Lyons, **"**Power Sources for Nanotechnology," *Int. J. of Nanotechnology*, 1 (2003) 149. (INVITED).
- P.J. Bouwman, J.A. Stanley, G.B. Cotten, K. E. Swider-Lyons, W. Dmowski, "Low-Pt oxide-based catalysts for ORR in PEM Fuel cells", *J. ElectroChem. Soc.*, **151** (12) A1989-A1998 (2004).
- P.J. Bouwman, W. Dmowski, K. E. Swider-Lyons, "Pt-FePO for ORR in PEM Fuel cells", *conf. proceedings Electrochem. Soc.,* Orlando (2003).
- W. Dmowski, T. Egami, P.J. Bouwman, K.E. Swider-Lyons, "Atomic Structure of Disordered Pt-Ru Black and Platinum Iron Phosphate Electrocatalysts", *conf. proceedings Electrochem. Soc.,* Orlando (2003).
- M. Teliska, P.J. Bouwman, K. Swider Lyons, D. Ramaker, "New Methods of Analysis in X-Ray Absorption Spectroscopy for Electrocatalysis", *conf. proceedings 207th ECS Meeting*, MA2005-01, Quebec City (2005).
- K.E. Swider-Lyons, M.E. Teliska, W.S. Baker, P.J. Bouwman, J.J. Pietron, "Leveraging Metal-Support Interactions to Improve the Activity of PEMFC Cathode Catalysts", *conf. proceedings 208th ECS Meeting,* MA2005-02, Los Angeles (2005).
- K.E. Swider-Lyons, M.E. Teliska, W.S. Baker, P.J. Bouwman, J.J. Pietron, "Leveraging Metal-Support Interactions to Improve the Activity of PEMFC Cathode Catalysts", ECS Trans. **1**, (6) 97 (2006).
- W.S. Baker, J.J. Pietron, M.E. Teliska, P.J. Bouwman, D.E. Ramaker, K.E. Swider-Lyons, "Enhanced Oxygen Reduction Activity in Acid by Tin-Oxide Supported Au Nanoparticle Catalysts", *J. ElectroChem. Soc.,* **153** (9) A1702-A1707 (2006).
- T.R. Ralph, Z, D. Barnwell, P.J. Bouwman, S. Buche, A. Hodgkinson, P. Holmes, M. Petch, M. Pollington, B. Wade, "Reinforced Membrane Durability in Proton Exchange Membrane Fuel Cells Stacks for Automotive Applications" , *J. Electrochem. Soc., accepted (2007).*

Presentations

- P.J. Bouwman *et al*, "Structural Analysis of sub-micron $LiCoO_2$ films", Philips Research Laboratories (Oct. 1999).
- P.J. Bouwman *et al*, "Lithium intercalation electrode performance", Philips Research Laboratories (Nov. 2000).
- P.J. Bouwman *et al*, "Lithium intercalation in thin-film $LiCoO_2$", Uppsala, Sweden (Feb 2001).
- P.J. Bouwman *et al*, "Characterization of Oriented, Submicron $LiCoO_2$ films", Materials Research (May 2001).
- P.J. Bouwman, B.A. Boukamp, H.J.M. Bouwmeester, P.H.L.Notten, "Lithium intercalation behaviour of preferentially oriented, sub-micron Li_xCoO_2 films", Solid State Ionics conference, Cairns, Australia (July 2001).
- P.J. Bouwman *et al*, "Lithium intercalation behaviour of preferentially oriented, sub-micron Li_xCoO_2 films", European Ceramic Society conference, speech competition *awarded first prize*, (Sept. 2001).
- P.J. Bouwman, B.A. Boukamp, H.J.M. Bouwmeester, P.H.L.Notten, "Lithium intercalation behaviour of preferentially oriented, sub-micron Li_xCoO_2 films", Philips Research Laboratories, (Oct. 2001).
- P.J. Bouwman, B.A. Boukamp, H.J.M. Bouwmeester, P.H.L.Notten, "Lithium intercalation behaviour of preferentially oriented, sub-micron Li_xCoO_2 films", FOM (Dec. 2001).
- P.J. Bouwman, public defence Ph-D thesis, University Twente, Enschede, the Netherlands (5 April 2002).
- P.J. Bouwman *et al*, "Intercalation in Li_xCoO_2 films", NRL, Washington DC, USA (Sept 2002).

- P.J. Bouwman *et al*, “Lithium intercalation in preferential $LiCoO_2$ films – influence of orientation”, Electro-Chemical Society, Salt Lake City, USA (Oct 2002).
- P.J. Bouwman*, B.A. Boukamp, H.J.M. Bouwmeester, P.H.L.Notten, “Lithium intercalation in preferential $LiCoO_2$ films – towards micro-battery application”, Electro-Chemical Society, Salt Lake City, USA (Oct 2002).
- “Low Pt catalysts for PEM Fuel Cells”, Department of Energy (DOE), Washington DC (14 Nov 2002).
- “Transition Metal Oxide catalysts for PEM Fuel Cells” Penn, University of Pennsylvania (27 Jan 2003).
- K.E. Swider-Lyons*, P. J. Bouwman, N. P. Ugarte, W. Dmowski, “Low-Platinum Electrocatalysts for Fuel Cells,” DOE Annual Laboratory Fuel Cell Review, Berkeley, CA, 19-22 May 2003, INVITED.
- K. E. Swider-Lyons*, P. J. Bouwman, W. Dmowski “Low platinum nanostructured catalysts for fuel cells,” Interagency Grantees Meeting Workshop, Arlington, VA 15-16 September 2003, INVITED.
- K. E. Swider-Lyons*, P. J. Bouwman, W. Dmowski, “Nanostructured oxide-based catalysts as oxygen reduction catalysts for fuel cell cathodes,” Seminar, Department of Physics and Atmospheric Sciences, Dalhousie University, Halifax, NS CANADA, 18 Sept 2003. INVITED
- K.E. Swider-Lyons*, P. J. Bouwman, W. Dmowski, “Low-Platinum Electrocatalysts for Fuel Cells,” DOE Annual Laboratory Fuel Cell Review, Philladelphia, PA, 24-26 May 2004. INVITED
- P. J. Bouwman*, K.E. Swider-Lyons, “Fuel Cell as a Power Source for a Micro Air Vehicle,” Naval Research Laboratory, Washington DC, 23 Aug 2004.
- P. J. Bouwman*, K.E. Swider-Lyons, “Fuel Cell Powered Micro Air Vehicle,” Naval Research Laboratory, Washington DC, 24 Aug 2004, INVITED.
- K.E. Swider-Lyons, P.J. Bouwman, W. Baker, M. Teliska, W. Dmowski, “Oxide- and phosphate-based catalysts for oxygen reduction at PEMFC Cathodes”, Symposium M: Materials Aspects of Fuel Cells, MRS Fall 2004.
- K.E. Swider-Lyons*, P.J. Bouwman, J. Kellogg, L. Monforton, D. White,M. Vick, “Fuel Cells for Micro Air Vehicles,” IDGA Tactical Power Sources Summit, Arlington VA 1-2 Feb 2005.
- P.J. Bouwman*, J. Wilkie, “Internal Review of LCS”, Johnson Matthey Fuel Cells, Swindon, UK (Jan 2006).

Posters

- Annually on MESA+ presentation day, Enschede, the Netherlands (1997-2002).
- Annually on FOM meetings, de Koningshof, Veldhoven, the Netherlands (1997-2002).
- Annually on “Chemie van de vaste stof”, de Blije Werelt, Lunteren, the Netherlands (1996-2002).
- P.J. Bouwman, B.A. Boukamp, H.J.M. Bouwmeester, P.H.L.Notten, “Lithium Intercalation in Preferential $LiCoO_2$ films”, Gordon Research Conference on Electrochemistry, 12-16 January 2003, Ventura, CA.
- P.J. Bouwman, J. A. Stanley, G. B. Cotten, K. E. Swider-Lyons, W. Dmowski, T. Egami, “Low-Platinum, Oxide-Based Electrocatalysts for Oxygen Reduction in PEM Fuel Cells,“ Gordon Research Conference on Electrochemistry, 12-16 January 2003, Ventura, CA.
- K. E. Swider-Lyons, P. J. Bouwman, N. P. Ugarte, W. Dmowski, “Amorphous hydrous metal oxides as electrocatalysts for fuel cell cathodes,” American Chemical Society Symposium on Advances in Materials for Proton Exchange Membrane Fuel Cells, 23-26 Feb 2003, Monterey, CA. INVITED
- K.E. Swider-Lyons,* P. J. Bouwman, N. P. Ugarte, W. Dmowski, “Pt-iron phosphates and Pt-tin oxides as oxygen reduction catalysts for fuel cell cathodes,” Gordon Research Conference on Fuel Cells, Bristol, RI, 27-31 July 2003. INVITED
- P. J. Bouwman, J.A.Stanley, G. B. Cotten, K. E. Swider-Lyons, W. Dmowski, T. Egami, “Low-Platinum, Oxide-Based Electrocatalysts for ORR in PEMFC,“ Electrochemistry program review, Annapolis, MD, March 2003.
- Karen Swider Lyons, Peter Bouwman, Danielle White, Matt Panaro, Jim Kellogg, Greg Ariff, Brian James, “Selecting a power source for a micro-airplane”, Workshop on Power Sources for Distributed Autonomous Systems, Naval Research Laboratory, Washington DC, 23 - 24 Feb 2004.
- P. J. Bouwman, W. Dmowski, K. E. Swider-Lyons, “Pt-FePO catalyst for ORR in PEMFC,“ Gordon Fuel Cell conference, Bristol, RI, July 2004.
