



DIFFER

Annual Report 2013 appendix

Dutch Institute for Fundamental Energy Research

This appendix to the DIFFER annual report 2013 gives an overview of the employees in the institute's groups and lists the scientific output at DIFFER in 2013. Some output from the themes on plasma surface interactions and nanolayer surface and interface physics is also part of the solar fuels theme; this is indicated in the output lists with an *.

The annual report and its appendix can be found at http://www.differ.nl/en/annual_reports

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appendix **A**

Personnel

Management

| | |
|-------------------|----------------------|
| Director | M.C.M. van de Sanden |
| Institute manager | W.R. Koppers |

Fusion - plasma surface interactions (PSI)

| | |
|--------------|--------------|
| Theme leader | A.J.H. Donné |
|--------------|--------------|

Computational Plasma Physics - High Temperature (CPP-HT)

| | |
|------------------|---|
| Program leader | W.J. Goedheer |
| Senior scientist | H.J. de Blank (50%, from CPP-HT) |
| PhD students | D.I. Astakhov, G.A. van Swaaij |
| BSc students | L.H.J. Krah, I.M. Polderman, C.J.G.M. Verbeke |
| Guest researcher | W. Lu |

PSI Engineering (PSI-E)

| | |
|-------------------|--|
| Program leader | G. De Temmerman |
| Senior scientists | H.J. van der Meiden, P.A. Zeijlmans van Emmichoven |
| Research engineer | M.A. van den Berg |
| Postdocs | S.C. Bardin, T. Morgan |
| PhD students | K. Bystrov, M.H.J. 't Hoen, I. Tanyeli, J. Zielinski |
| MSc students | A. Gallo, R.G. Zoomers |
| BSc students | A.Y.F. Ayal, J.J.E. Camphuijsen, G.G. van Eden, P.C. Govers T.M. de Kruijf, H. Wierenga |
| Guest researchers | L. Cheng, V. Kvon, Y. Jia |

PSI Facilities and Instrumentation (PSI-FI)

| | |
|--------------------|--|
| Program leader | P.C. de Vries (until 1-12-2013), A.J.H. Donné a.i. |
| Research engineers | R.S. Al, S. Brons, H.J.N. van Eck, O.G. Kruijt, M.J. van de Pol, P.R. Prins, J. Scholten, C.J. Tito |
| BSc student | C. Fransen |

Fusion - control of burning plasma

Theme leader A.J.H. Donné

Computational Plasma Physics - High Temperature (CPP-HT)

| | |
|-------------------|--|
| Program leader | E. Westerhof |
| Senior scientists | H.J. de Blank, G.M.D. Hogeweij |
| Postdoc | J.L. Pratt |
| PhD students | B. Ayten, J. Citrin, B. van Es, J.W. Haverkort (joint appointment with CWI), F. Jaulmes, W. Weymiens, D. Zhelyazov |
| BSc students | J. Heres, J. van Dongen, J.D. Paton |
| Guest researcher | R. Boot |

Plasma Diagnostics (PDG)

| | |
|-------------------|--|
| Program leader | P.C. de Vries (until 1-12-2013), A.J.H. Donné a.i. |
| Senior scientists | I.G.J. Classen, M. Kantor (also Ioffe and FZJ) |
| Postdocs | E. Delabie, D. Moseev, A. Shumack, M. Tsalas |
| PhD students | A. Bogomolov, J. Hawke, A. Kappatou |

Tokamak Physics (TP)

| | |
|--------------------|--|
| Program leader | M.R. de Baar |
| Research engineers | B. Elzendoorn, D. Ronden |
| PhD students | M. van Berkel, H. Boessenkool, J. Oosterhout, H. van den Brand, G. Hommen, M. Lauret |
| BSc student | D.J. Bult |
| Guest researchers | R.J. van der Hulst, B.F. van Nieuwenhuizen, .W. Schoen, D. Smedinga |

ITER-NL

| | |
|----------------------------|------------------|
| Program leader | A.J.H. Donné |
| Industrial Liaison Officer | A.G.A. Verhoeven |

Solar fuels - sustainable energy storage

Theme leader M.C.M. van de Sanden

Materials and Material Processing for Solar Fuels (MaSF)

| | |
|-------------------|---|
| Program leader | M.C.M. van de Sanden |
| Senior scientists | A. Bieberle, W.A. Bongers, M. Gleeson, A.P.H. Goede, G.J. van Rooij |
| Research engineer | M.F. Graswinckel |
| Postdocs | A. Baldi, F.J.J. Peeters, S.A. Starostin, S. Welzel |
| PhD student | N. den Harder |
| MSc student | T. Minea |

Atmospheric Plasma Processing for Functional Films (APPF)

| | |
|----------------|---------------|
| Program leader | H.W. de Vries |
|----------------|---------------|

Nanolayer surface and interface physics (nSI)

Theme leader F. Bijkerk

Advanced Application of XUV Optics (AXO)

| | |
|--------------------|--|
| Group leader | E. Louis |
| Scientific advisor | R. Sobierajski |
| Research engineers | S. Alonso van der Westen, A.J. van Calcar, K. Grootkarzijn, P. Sallé |
| Technician | E. Zoethout |
| Postdoc | Q. Huang, R.A. Loch |
| PhD student | I. Makhotkin |
| BSc student | A.C. Meijer |

Extreme UV Laboratory (EUV-Lab)

| | |
|-----------------------|--|
| Group leader | C. J. Lee |
| PhD students | R. van den Bos, A. Dolgov, A. Gao, M. Pachecka, F. Liu |
| Undergraduate student | B. van Albada |
| Guest reseacher | J.M. Sturm |

Thin Film & Multilayer Physics (TFM)

| | |
|--------------------|--|
| Group leader | A.E. Yakshin |
| Senior scientist | R.W.E. van de Kruijs |
| Research engineers | B.J.M. Krijger |
| Postdoc | T. Zaharia |
| PhD students | J. Bosgra, R. Coloma Ribera, S. Huber, V. Medvedev, S. Nyabero |
| BSc students | M. Bolhuis, S. Kokke |

Support Facilities and Staff

Division head

W.R. Koppers

Communication

Group leader

F.T.M.E. de Vries

Personnel

A.P. Visser

Financial Administration

Group leader

M.P.M. Schoonen

Personnel

D. Nguyen, N. Nobbenhuis-Versluis, S. Werner

Management Support

Group leader

W.R. Koppers

Personnel

P.F.M. Delmee, E.M. Khan, E. Langereis, J.G. Stroet, M.J. van Veenendaal, C.M. Visser, M.D. van der Vlis, E.C.M. van Wijk

Personnel Services (Human Resources)

Group leader

W.R. Koppers (a.i. until July), A.M.A. van Oploo (starting July)

Personnel

J.M. van Achthoven, C.L.M. Tonen

Electronics & ICT

Group leader

A. Broekema

Personnel

M.T. Breugem, J.W. Genuit, P.W.C. Groen, G.W. Hendriks, G. Kaas
J.J. Kamp, B.J.M. Krijger, G. Land, W. Melissen, A.J. Poelman, J.J.B. Stakenborg,
C.J. Theunissen, J.W. Wahlbrinck, F. Wijnoltz, R.W. Zimmerman

Mechanical Techniques

Group leader

F.J. van Amerongen

Personnel

M.P.A. van Asselen, A.G.M. van den Bogaard, J. Lagerweij, B. Lamers,
L.W.E.G. Römers, A. Tamminga, C.R. Wolbeer, P.M. Wortman

Apprentices

R.A. Blok, V.S.P. van der Lende, D.R. Roelofs

Technical Facilities

Group leader

W.K. van de Graaf

Personnel

M.H. Kloosterman, E.P.A. de Korte

Domestic Facilities

Group leader

J.E. Kragten

Personnel

J.F. Alberts, J.C. Bleijenberg-Maarsseveen, F.F. Hekkenberg, J.M. Rietveld-Nieuwhoff
S. van Schaik, P. Stekelenburg-van Woudenberg, J.B. Uwland,
L.M. van de Ven-van den Akker

Gardens and Surroundings

Group leader

A. Bikker

appendix **B**

Output

DIFFER

Public events: 2

1. *Open day for the general audience, 2013/10/06, Nieuwegein, the Netherlands*
2. *Open day for high school to university students, 2013/10/03, Nieuwegein, the Netherlands*

Media: 4

3. *Aannemer nieuwbouw DIFFER geselecteerd, EngineersOnline, 2013/02/26*
4. *Dura Vermeer gaat nieuwbouw (zonne-)energie-instituut DIFFER realiseren, Solar Magazine, 2013/02/26*
5. *DIFFER ontwikkelt de energie van de toekomst, Eindhovens Dagblad, 2013/03/09, Interview with W.R. Koppers*
6. *TUE-hoogleraar Van de Sanden benoemd tot KNAW-lid, www.bits-chips.nl, 2013/05/24, Interview with M.C.M. van de Sanden*

Fusion - plasma surface interactions (PSI)

PhD theses: 2

1. *H.J.N. van Eck, The linear plasma generator Magnum-PSI, PhD thesis at the Technical University Eindhoven, 2013/01/17, Promotor: N.J. Lopes Cardozo, A.W. Kleyn*
2. *J.J. Zielinski, A high power pulsed plasma system for material testing under simultaneous continuous and transient loads, PhD thesis at the Technical University Eindhoven, 2013/01/14, Promotor: N.J. Lopes Cardozo, M.C.M. van de Sanden*

Master theses: 7

1. *D. van den Bekerom, (Master thesis Technische Universiteit Eindhoven) Erosion and power handling of liquid tin under high heat and particle fluxes in Pilot-PSI, 2013*
2. *G.G. van Eden, (Master thesis Universiteit Utrecht) Transient heat load studies on tungsten using a pulsed millisecond laser in a high-flux plasma environment, 2013*
3. *T. de Kruijf, (Master thesis Technische Universiteit Eindhoven) ELM transient replication using pulsed plasmas in Magnum-PSI, 2013*
4. *I.M. Polderman, (Master thesis Radboud University Nijmegen) Validation of Eunomia with Optical Emission Spectroscopy Data from Pilot-PSI, 2013*
5. *C. Spork, (Master thesis University of Utrecht) Determination of Hydrogen and Deuterium Inventory of Pre-Treated Targets Using Laser-Induced Desorption, 2013*
6. *E.A. Stapel, (Master thesis Technische Universiteit Eindhoven) Feasibility of Laser Induced Breakdown Spectroscopy (LIBS) as a diagnostic tool for fusion reactor walls, 2013*
7. *R. Zoomers, (Master thesis Universiteit Utrecht) Applicability of Laser-Induced Desorption Quadrupole Mass Spectrometry (LID-QMS) for the Determination of Local Deuterium Retention, 2013*

Bachelor theses: 4

1. *C. Fransen, (HBO scriptie Haagse Hogeschool, Delft) Lineaire plasmagenerator Magnum-PSI. Het reduceren van kathode-erosie, 2013*
2. *L. Krah, (Bachelor thesis Universiteit Utrecht) Time-evolution of velocity distributions of impurity ions in deuterium plasma due to Coulomb interaction, 2013*

3. * C.G.J.M. Verbeke, (Bachelor honour thesis Utrecht University) *Modelling the Electron Energy Distribution Function in CO₂ plasmas*, 2013
4. H. Wierenga, (Bachelor thesis Universiteit Utrecht) *Modelling diffusion processes of deuterium in tungsten*, 2013

Publications in peer-reviewed scientific journals: 50

1. M.A. van den Berg, K. Bystrov, R. Pasquet, J.J. Zielinski, G. De Temmerman, *Thermographic determination of the sheath heat transmission coefficient in a high density plasma*, *J. Nucl. Mater.* 438, Supplement (2013) S431 - S434
2. V.I. Bobkov, G. Arnoux, S. Brezinsek, J.W. Coenen, L. Colas, M. Clever, A. Czarnecka, F. Braun, R. Dux, A. Huber et al., *ICRF specific plasma wall interactions in JET with the ITER-like wall*, *J. Nucl. Mater.* 438, Supplement (2013) S160 - S165
3. S. Brezinsek, S. Jachmich, M.F. Stamp, A.G. Meigs, J.W. Coenen, K. Krieger, C. Giroud, M. Groth, V. Philipps, S. Grünhagen et al., *Residual carbon content in the initial ITER-Like Wall experiments at JET*, *J. Nucl. Mater.* 438, Supplement (2013) S303 - S308
4. K. Bystrov, T.W. Morgan, I. Tanyeli, G. De Temmerman, M.C.M. van de Sanden, *Chemical sputtering of graphite by low temperature nitrogen plasmas at various substrate temperatures and ion flux densities*, *J. Appl. Phys.* 114 (2013) 133301
5. K. Bystrov, L. van der Vegt, G. De Temmerman, C. Arnas, L. Marot, *Reorganization of graphite surfaces into carbon micro- and nanoparticles under high flux hydrogen plasma bombardment*, *J. Vac. Sci. Technol. A* 31 (2013) 011303
6. K. Bystrov, L.B. van der Vegt, G.A. van Swaaij, T. Zaharia, Y. Kuang, W.J. Goedheer, G. De Temmerman, *Carbon migration during methane injection experiments under ITER divertor-relevant conditions*, *J. Nucl. Mater.* 438, Supplement (2013) S686 - S689
7. J.W. Coenen, M. Sertoli, S. Brezinsek, I. Coffey, R. Dux, C. Giroud, M. Groth, A. Huber, D. Ivanova, K. Krieger et al., *Long-term evolution of the impurity composition and impurity events with the ITER-like wall at JET*, *Nucl. Fusion* 53 (2013) 073043
8. C. Giroud, G.P. Maddison, S. Jachmich, F. Rimini, M.N.A. Beurskens, I. Balboa, S. Brezinsek, R. Coelho, J.W. Coenen, L. Frassinetti et al., *Impact of nitrogen seeding on confinement and power load control of a high-triangularity JET ELMy H-mode plasma with a metal wall*, *Nucl. Fusion* 53 (2013) 113025
9. P.W.C. Groen, V. van Beveren, A. Broekema, P.J. Busch, J.W. Genuit, G. Kaas, A.J. Poelman, J. Scholten, P.A. Zeijlmans van Emmichoven, *Software architecture for control and data acquisition of linear plasma generator Magnum-PSI*, *Fusion Eng. Des.* 88 (2013) 1174 - 1177
10. M. Groth, S. Brezinsek, P. Belo, G. Corrigan, D. Harting, S. Wiesen, M.N.A. Beurskens, M. Brix, M. Clever, J.W. Coenen et al., *Target particle and heat loads in low-triangularity L-mode plasmas in JET with carbon and beryllium/tungsten walls*, *J. Nucl. Mater.* 438, Supplement (2013) S175 - S179
11. M. Groth, S. Brezinsek, P. Belo, M.N.A. Beurskens, M. Brix, M. Clever, J.W. Coenen, C. Corrigan, T. Eich, J. Flanagan et al., *Impact of carbon and tungsten as divertor materials on the scrape-off layer conditions in JET*, *Nucl. Fusion* 53 (2013) 093016
12. * M.C. Günendi, I. Tanyeli, G.B. Akgüç, A. Bek, R. Turan, O. Gülseren, *Understanding the plasmonic properties of dewetting formed Ag nanoparticles for large area solar cell applications*, *Opt. Express* 21 (2013) 18344-18353
13. D. Harting, M. Groth, M. Beurskens, P. Boerner, M. Brix, J.W. Coenen, G. Corrigan, M. Lehnen, S. Marsen, G. van Rooij et al., *Simulation of tungsten sputtering with EDGE2D-EIRENE in low triangularity L-mode JET ITER like wall configuration*, *J. Nucl. Mater.* 438, Supplement (2013) S480 - S483
14. M.H.J. 't Hoen, M. Mayer, A.W. Kleyn, P.A. Zeijlmans van Emmichoven, *Strongly Reduced Penetration of Atomic Deuterium in Radiation-Damaged Tungsten*, *Phys. Rev. Lett.* 111 (2013) 225001
15. M.H.J. 't Hoen, M. Mayer, A.W. Kleyn, H. Schut, P.A. Zeijlmans van Emmichoven, *Reduced deuterium retention in self-damaged tungsten exposed to high-flux plasmas at high surface temperatures*, *Nucl. Fusion* 53 (2013) 043003

16. D. Ivanova, A. Widdowson, J. Likonen, L. Marot, S. Koivuranta, J.P. Coad, M. Rubel, P. Petersson, G. De Temmerman, Assessment of cleaning methods for first mirrors tested in JET for ITER, *J. Nucl. Mater.* 438, Supplement (2013) S1241 - S1244
17. K. Krieger, S. Brezinsek, M. Reinelt, S.W. Lisgo, J.W. Coenen, S. Jachmich, S. Marsen, A. Meigs, G. van Rooij, M. Stamp et al., Beryllium migration and evolution of first wall surface composition in the JET ILW configuration, *J. Nucl. Mater.* 438, Supplement (2013) S262 - S266
18. A. Litnovsky, M. Matveeva, A. Herrmann, V. Rohde, M. Mayer, K. Sugiyama, K. Krieger, V. Voitsenya, G. Vayakis, A.E. Costley et al., First studies of ITER-diagnostic mirrors in a tokamak with an all-metal interior: results of the first mirror test in ASDEX Upgrade, *Nucl. Fusion* 53 (2013) 073033
19. A. Litnovsky, D.L. Rudakov, S. Bozhenkov, R.D. Smirnov, S. Ratynskaia, H. Bergsäter, I. Bykov, N. Ashikawa, G. De Temmerman, Y. Xu et al., Dust investigations in TEXTOR: Impact of dust on plasma-wall interactions and on plasma performance, *J. Nucl. Mater.* 438, Supplement (2013) S126 - S132
20. A. Malaquias, V. Philipps, A. Huber, A. Hakola, J. Likonen, J. Kolehmainen, S. Tervakangas, M. Aints, P. Paris, M. Laan et al., Development of ITER relevant laser techniques for deposited layer characterisation and tritium inventory, *J. Nucl. Mater.* 438, Supplement (2013) S936 - S939
21. L. Marot, G. De Temmerman, R.P. Doerner, K. Umstadter, R.S. Wagner, D. Mathys, M. Duggelin, E. Meyer, Synergistic effects of hydrogen plasma exposure, pulsed laser heating and temperature on rhodium surfaces, *J. Nucl. Mater.* 432 (2013) 388 - 394
22. L. Marot, E. Meyer, M. Rubel, D. Ivanova, A. Widdowson, J.P. Coad, J. Likonen, A. Hakola, S. Koivuranta, G. De Temmerman, Performances of Rh and Mo mirrors under JET exposure, *J. Nucl. Mater.* 438, Supplement (2013) S1187 - S1191
23. H.J. van der Meiden, M.A. van den Berg, S. Brons, H. Ding, H.J.N. van Eck, M.H.J. 't Hoen, J. Karhunen, T.M. de Kruijff, M. Laan, C. Li et al., Laser-based diagnostics applications for plasma-surface interaction studies, *JINST* 8 (2013) C11011
24. H. Meyer, I.G. Abel, R.J. Akers, A. Allan, S.Y. Allan, L.C. Appel, O. Asunta, M. Barnes, N.C. Barratt, B.N. Ayed et al., Overview of physics results from MAST towards ITER/DEMO and the MAST Upgrade, *Nucl. Fusion* 53 (2013) 104008
25. T.W. Morgan, J.J. Zielinski, B.J. Hensen, H.Y. Xu, L. Marot, G. De Temmerman, Reduced damage threshold for tungsten using combined steady state and transient sources, *J. Nucl. Mater.* 438, Supplement (2013) S784 - S787
26. R. Neu, A. Kallenbach, M. Balden, V. Bobkov, J.W. Coenen, R. Drube, R. Dux, H. Greuner, A. Herrmann, J. Hobirk et al., Overview on plasma operation with a full tungsten wall in ASDEX Upgrade, *J. Nucl. Mater.* 438, Supplement (2013) S34 - S41
27. P. Paris, A. Hakola, K. Bystrov, G. De Temmerman, M. Aints, I. Jögi, M. Kiisk, J. Kozlova, M. Laan, J. Likonen et al., Erosion of marker coatings exposed to Pilot-PSI plasma, *J. Nucl. Mater.* 438, Supplement (2013) S754 - S757
28. K.S.C. Peerenboom, J. van Dijk, W.J. Goedheer, G.M.W. Kroesen, Effects of magnetization on an expanding high-enthalpy plasma jet in argon, *Plasma Sources Sci. Technol.* 22 (2013) 025010
29. V. Philipps, A. Malaquias, A. Hakola, J. Karhunen, G. Maddaluno, S. Almaviva, L. Caneve, F. Colao, E. Fortuna, P. Gasior et al., Development of laser-based techniques for in situ characterization of the first wall in ITER and future fusion devices, *Nucl. Fusion* 53 (2013) 093002
30. T. Pütterich, R. Dux, R. Neu, M. Bernert, M.N.A. Beurskens, V. Bobkov, S. Brezinsek, C. Challis, J.W. Coenen, I. Coffey et al., Observations on the W-transport in the core plasma of JET and ASDEX Upgrade, *Plasma Phys. Control. Fusion* 55 (2013) 124036
31. S. Ratynskaia, L. Vignitchouk, P. Tolias, I. Bykov, H. Bergsäter, A. Litnovsky, N. den Harder, E. Lazzaro, Migration of tungsten dust in tokamaks: role of dust-wall collisions, *Nucl. Fusion* 53 (2013) 123002
32. H. Reimerdes, G.P. Canal, B.P. Duval, B. Labit, T. Lunt, W.A.J. Vijvers, S. Coda, G. De Temmerman, T.W. Morgan, F. Nespoli et al., Power distribution in the snowflake divertor in TCV, *Plasma Phys. Control. Fusion* 55 (2013) 124027
33. * M. De Respinis, G. De Temmerman, I. Tanyeli, M.C.M. van de Sanden, R.P. Doerner, M.J. Baldwin, R. van de Krol, Efficient Plasma Route to Nanostructure Materials: Case Study on the Use of m-WO₃ for Solar Water Splitting, *ACS Appl. Mater. Interfaces* 5 (2013) 7621-7625
34. G.J. van Rooij, J.W. Coenen, L. Aho-Mantila, S. Brezinsek, M. Clever, R. Dux, M. Groth, K. Krieger, S. Marsen, G.F. Matthews et al., Tungsten divertor erosion in all metal devices: Lessons from the ITER like wall of JET, *J. Nucl. Mater.* 438, Supplement (2013) S42 - S47
35. J. Scholten, P.A. Zeijlmans van Emmichoven, H.J.N. van Eck, P.H.M. Smeets, G.C. De Temmerman, S. Brons, M.A. van den Berg, H.J. van der Meiden, M.J. van de Pol, M.F. Graswinckel et al., Operational status of the Magnum-PSI linear plasma device,

Fusion Eng. Des. 88 (2013) 1785 - 1788

36. V.A. Soukhanovskii, R.E. Bell, A. Diallo, S. Gerhardt, S. Kaye, E. Kolemen, B.P. LeBlanc, A. McLean, J.E. Menard, S.F. Paul et al., *Advanced divertor configurations with large flux expansion*, *J. Nucl. Mater.* 438, Supplement (2013) S96 - S101
37. G.A. van Swaaij, K. Bystrov, D. Borodin, A. Kirschner, T. Zaharia, L.B. van der Vegt, G. De Temmerman, W.J. Goedheer, *Carbon transport and escape fraction in a high density plasma beam*, *J. Nucl. Mater.* 438, Supplement (2013) S629 - S632
38. * I. Tanyeli, H. Nasser, F. Es, A. Bek, R. Turan, *Effect of surface type on structural and optical properties of Ag nanoparticles formed by dewetting*, *Opt. Express* 21 (2013) A798-A807
39. G. De Temmerman, J. Daniels, K. Bystrov, M.A. van den Berg, J.J. Zielinski, *Melt-layer motion and droplet ejection under divertor-relevant plasma conditions*, *Nucl. Fusion* 53 (2013) 023008
40. G. De Temmerman, K. Bystrov, R.P. Doerner, L. Marot, G.M. Wright, K.B. Woller, D.G. Whyte, J.J. Zielinski, *Helium effects on tungsten under fusion-relevant plasma loading conditions*, *J. Nucl. Mater.* 438, Supplement (2013) S78 - S83
41. G. De Temmerman, K. Bystrov, F. Liu, W. Liu, T. Morgan, I. Tanyeli, M. van den Berg, H. Xu, J. Zielinski, *Plasma-surface interactions under high heat and particle fluxes*, *Acta Polytechn.* 53 (2013) 142-147
42. G. De Temmerman, M.A. van den Berg, J. Scholten, A. Lof, H.J. van der Meiden, H.J.N. van Eck, T.W. Morgan, T.M. de Kruijff, P.A. Zeijlmans van Emmichoven, J.J. Zielinski, *High heat flux capabilities of the Magnum-PSI linear plasma device*, *Fusion Eng. Des.* 88 (2013) 483 - 487
43. Y. Ueda, H.Y. Peng, H.T. Lee, N. Ohno, S. Kajita, N. Yoshida, R. Doerner, G. De Temmerman, V. Alimov, G. Wright, *Helium effects on tungsten surface morphology and deuterium retention*, *J. Nucl. Mater.* 442, Supplement (2013) S267 - S272
44. R.C. Wieggers, D.P. Coster, P.W.C. Groen, H.J. de Blank, W.J. Goedheer, *B2.5-Eunomia simulations of Pilot-PSI plasmas*, *J. Nucl. Mater.* 438, Supplement (2013) S643 - S646
45. M. Wirtz, J. Linke, G. Pintsuk, G. De Temmerman, G.M. Wright, *Thermal shock behaviour of tungsten after high flux H-plasma loading*, *J. Nucl. Mater.* 443 (2013) 497-501
46. K.B. Woller, D.G. Whyte, G.M. Wright, R.P. Doerner, G. De Temmerman, *Helium concentration in tungsten nano-tendrils surface morphology using Elastic Recoil Detection*, *J. Nucl. Mater.* 438, Supplement (2013) S913 - S916
47. G.M. Wright, D. Brunner, M.J. Baldwin, K. Bystrov, R.P. Doerner, B. Labombard, B. Lipschultz, G. De Temmerman, J.L. Terry, D.G. Whyte et al., *Comparison of tungsten nano-tendrils grown in Alcator C-Mod and linear plasma devices*, *J. Nucl. Mater.* 438, Supplement (2013) S84 - S89
48. H.Y. Xu, Y.B. Zhang, Y. Yuan, B.Q. Fu, A. Godfrey, G. De Temmerman, W. Liu, X. Huang, *Observations of orientation dependence of surface morphology in tungsten implanted by low energy and high flux D plasma*, *J. Nucl. Mater.* 443 (2013) 452-457
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52. C. Giroud, M. Oberkofler, D. Douai, G. Maddison, M. Beurskens, S. Brezinsek, J.W. Coenen, T. Dittmar, A. Drenik, L. Frassinetti et al., *Nitrogen Seeding for Heat Load Control in JET ELMy H-mode Plasmas and its Compatibility with ILW*

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1. 40th EPS Conference on Plasma Physics, 2013/07/01, Espoo, Finland, M.A. Jaworski, T. Abrams, M.G. Bell, R.E. Bell, G. De Temmerman, T.K. Gray, S.P. Gerhardt, R. Kaita, H.W. Kugel, B.P. LeBlanc et al., *Liquid metal plasma-facing component research on the NSTX, I1.101*
2. 16th International Symposium on Laser-Aided Plasma Diagnostics (LAPD 2013), 2013/09/22, Madison, WI, USA, H.J. van der Meiden, M.A. van de Berg, S. Brons, H. Ding, M.H.J. 't Hoen, C. Li, T.W. Morgan, M.J. van de Pol, J. Scholten, P.H.M. Smeets et al., *Laser-based diagnostics for retention measurements and understanding plasma-surface interaction, T(33)*
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5. 6th International Conference on Plasma Science and Applications ICPSA 2013, 2013/12/04, Singapore, China, G.C. De Temmerman, *Understanding plasma-surface interactions under extreme conditions*
6. 18th International Summer School on Vacuum, Electron and Ion Technologies VEIT, 2013/10/07, Sozopol, Bulgaria, G.C. De Temmerman, *Plasma-surface interactions under extreme conditions: challenges and opportunities, IL-22*
7. 66th Annual Gaseous Electronics Conference, 2013/09/30, Princeton, NJ, USA, G. De Temmerman, *Plasma-surface interactions under extreme conditions: challenges and opportunities, AM1.00008*
8. 40th EPS Conference on Plasma Physics, 2013/07/01, Espoo, Finland, G. De Temmerman, *Study of dust formation and migration under ITER-relevant conditions in the Pilot-PSI linear plasma device, I4.311*
9. ISPlasma2013 5th International Symposium on Advanced Plasma Science, 2013/01/28, Nagoya, Japan, G.C. De Temmerman,

Efficient nanostructuring of metals by low energy helium ions for advanced energy materials, Fra-C030C

10. *Physics@FOM Veldhoven 2013, 2013/01/22, Veldhoven, Netherlands, P. Zeijlmans van Emmichoven, First plasma-wall studies on novel linear plasma generator Magnum-PSI, F08.03*

Other oral and poster presentations at (international) conferences and meetings: 43

1. *55th Annual Meeting of the APS Division of Plasma Physics, 2013/11/11, Denver, CO, USA, T. Abrams, M. Jaworski, R. Kaita, D.P. Stotler, G.C. De Temmerman, M.A. van de Berg, H.J. van der Meiden, T.W. Morgan, Erosion and re-deposition of lithium coatings on graphite and TZM molybdenum in support of NSTX-U divertor operations, Oral, JO4.00014*
2. *14th International Conference on Plasma-Facing Materials and Components for Fusion Applications PFMC-14, 2013/05/13, Julich, Germany, T. Abrams, M.A. Jaworski, R. Kaita, D.P. Stotler, G.C. De Temmerman, M.A. Gleeson, J. Scholten, M.A. van den Berg, H.J. van der Meiden, Compositional changes of lithium coatings on TZM molybdenum, graphite and tungsten during plasma bombardment, Poster, A199*
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4. *55th Annual Meeting of the APS Division of Plasma Physics, 2013/11/11, Denver, CO, USA, J. Allain, O. El-Atwani, J. Hinks, S. Gonderman, A. Neff, T. Morgan, K. Bystrov, G.C. De Temmerman, Plasma-surface interactions on extreme grain-refined tungsten tested under multi-scale fusion reactor conditions, Oral, JM9.00002*
5. *25th Symposium Plasma Physics and Radiation Technology, 2013/03/05, Lunteren, The Netherlands, D.C.M. van den Bekerom, K. Bystrov, I. Tanyeli, G. De Temmerman, Temperature dependence of liquid tin erosion under high flux plasma in Pilot-PSI, Poster, A2*
6. *International Conference on Fusion Reactor Materials ICFRM-16, 2013/10/20, Beijing, China, L. Buzi, G.C. De Temmerman, B. Unterberg, A. Litnovsky, V. Philipps, G. van Oost, Influence of the particle flux and surface temperature on surface modifications of tungsten, Poster, A115*
7. *DPG - Frühjahrstagung, 2013/02/25, Jena, Deutschland, L. Buzi, G. De Temmerman, M. Reinhart, B. Unterberg, G. van Oost, Influence of tungsten microstructure and ion flux on deuterium plasma-induced surface modifications and deuterium retention, Poster*
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10. *14th International Conference on Plasma-Facing Materials and Components for Fusion Applications PFMC-14, 2013/05/13, Julich, Germany, L. Cheng, H.B. Zhou, B. Wang, Y. Zhang, G.C. De Temmerman, G.H. Lu, Reduced Deuterium Retention due to Noble Gas Pre-Irradiation, Poster, A125*
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 20. *25th Symposium Plasma Physics and Radiation Technology, 2013/03/05, Lunteren, The Netherlands, T.M. de Kruif, T.W. Morgan, H.J. van der Meiden, J. Scholten, G. De Temmerman, ELM transient replication using pulsed plasmas in MAGNUM-PSI, Poster, A20*
 21. *US-EU Joint Transport Task Force Workshop, 2013/04/08, Santa Rosa, CA, USA, B. Labit, G. Canal, H. Reimerdes, B. Tal, W. Vijvers, S. Coda, B.P. Duval, T. Morgan, G. De Temmerman, J. Zielinski et al., Edge physics in TCX plasmas with snowflake divertor, Oral*
 22. *11th International Symposium on Fusion Nuclear Technology ISFNT-11, 2013/09/16, Barcelona, Spain, C. Li, X. Wu, C. Zhang, H. Ding, G. De Temmerman, H.J. van der Meiden, Study on Deuterium Retention and Lithiation Properties of Tungsten, Poster, P1-025*
 23. *4th IEA International Workshop on Plasma Material Interaction Facilities for Fusion Research (PMIF 2013), 2013/09/09, Oak Ridge, TN, USA, H.J. van der Meiden, Thomson scattering for measuring electron and ion properties during plasma-wall interactions, Oral*
 24. *10th Frontiers in Low Temperature Plasma Diagnostics, 2013/04/28, Kerkrade, Netherlands, H.J. van der Meiden, M.A. van de Berg, S. Brons, T.W. Morgan, N.N. Naumenko, M.J. van de Pol, J. Scholten, P.H.M. Smeets, S.N. Tugarinov, G.C. De Temmerman, Thomson scattering at the high flux linear plasma generator Magnum-PSI for the determination of electron and ion properties, Poster, P2-22*
 25. *40th EPS Conference on Plasma Physics, 2013/07/01, Espoo, Finland, T.W. Morgan, T.M. de Kruif, H.J. van der Meiden, J. Scholten, B.J.M. Krijger, G. De Temmerman, An ITER relevant high-repetition rate ELM replication system for the Magnum-PSI linear device, Poster, P1.120*
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 28. *55th Annual Meeting of the APS Division of Plasma Physics, 2013/11/11, Denver, CO, USA, A.L. Neff, K.E. Luitjohan, J.P. Allain, G.C. De Temmerman, Surface chemistry of Li coatings on polycrystalline W and ATJ graphite irradiated by D and He ions, Poster, TP8.00056*
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- Julich, Germany, K. Piipa, P. Parisa, A. Hakola, K. Bystrov, G.C. De Temmerman, M. Aints, I. Jögia, J. Kozlova, M. Laan, J. Likonen et al., Influence of He/D₂ plasma fluxes on tungsten marker coatings, Poster, A023
31. 25th Symposium Plasma Physics and Radiation Technology, 2013/03/05, Lunteren, The Netherlands, I.M. Polderman, R.C. Wieggers, W.J. Goedheer, Validation of Eunomia against Optical Emission data from Pilot-PSI, Oral, O2
 32. 14th International Conference on Plasma-Facing Materials and Components for Fusion Applications PFMC-14, 2013/05/13, Julich, Germany, C. Ruset, H. Maier, E. Grigore, G.F. Matthews, G.C. De Temmerman, A. Widdowson, JET-EFDA contributors, W coatings under high thermal loads in JET and Magnum-PSI, Poster, A060
 33. 40th EPS Conference on Plasma Physics, 2013/07/01, Espoo, Finland, G.A. van Swaaij, L. Krah, H. van der Meiden, G.C. De Temmerman, W.J. Goedheer, Magnetisation (or lack thereof) of impurity ions in high-density edge plasmas, Poster, P1.103
 34. Physics@FOM Veldhoven 2013, 2013/01/22, Veldhoven, Netherlands, G. van Swaaij, K. Bystrov, D. Borodin, A. Kirschner, G. De Temmerman, W. Goedheer, Carbon erosion by high-density H plasma diagnosed with CH emission, Poster, P08.11
 35. * 2013 MRS Spring Meeting & Exhibit (Materials Research Society), 2013/04/01, San Francisco, CA, USA, I. Tanyeli, M. Baldwin, R. Doerner, R. van de Krol, M. De Respinis, M.C.M. van de Sanden, G. De Temmerman, Nanostructured Photocatalytic Metal Oxides Prepared by High Flux of Low Energy He Ion Irradiation, Poster, S12.20
 36. International Conference on Fusion Reactor Materials ICFRM-16, 2013/10/20, Beijing, China, G.C. De Temmerman, Effect of plasma exposure on tungsten surface damage during transient heat loads and consequences for ITER, Oral, O-3B-01
 37. 14th International Conference on Plasma-Facing Materials and Components for Fusion Applications PFMC-14, 2013/05/13, Julich, Germany, G.C. De Temmerman, H.Y. Xu, G.N. Luo, Y. Yuan, B.Q. Fu, A. Godfrey, R.G. Zoomers, M.H.J. 't Hoen, W. Liu, Influence of the particle flux on deuterium-induced surface modifications: nanostructure formation under ITER-relevant conditions, Poster, A156
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 41. 55th Annual Meeting of the APS Division of Plasma Physics, 2013/11/11, Denver, CO, USA, W. Vijvers, G. Canal, B. Duval, B. Labit, H. Reimerdes, S. Coda, T. Lunt, T.W. Morgan, G.C. De Temmerman, Power exhaust in all geometric variations of the snowflake divertor on TCV, Poster, PP8.00047
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 43. 25th Symposium Plasma Physics and Radiation Technology, 2013/03/05, Lunteren, The Netherlands, R. Zoomers, M.H.J. 't Hoen, H.J. van der Meiden, P.A. Zeijlmans van Emmichoven, Determination of local deuterium retention in tungsten using Laser-Induced Desorption, Poster, B11

Media: 9

1. Carbon nanostructures grow under extreme particle bombardment, PhysOrg.com, 2013/11/28, Interview with K. Bystrov, G.C. De Temmerman
2. Fusiereactor wordt graaefabriek, C2Wlabnews.com, 2013/11/28, Interview with K. Bystrov, G.C. De Temmerman
3. Magnum-PSI maakt ITER-achtig plasma, EngineeringNet.be, 2013/02/22, Interview with H.J.N. van Eck
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Fusion - control of burning plasma

PhD theses: 2

1. B. Ayten, *Dynamical aspects of tearing mode suppression by electron cyclotron heating and current drive in tokamak plasmas*, PhD thesis at the Eindhoven University of Technology, 2013/12/16, Promotor: A.J.H. Donné, M.R. de Baar
2. J.W. Haverkort, *Magnetohydrodynamic waves and instabilities in rotating tokamak plasmas*, PhD thesis at the Technical University Eindhoven, 2013/03/21, Promotor: B. Koren

Master theses: 2

1. J. van Dongen, (Master thesis Universiteit Utrecht:) *Optimization of Hybrid Scenario ITER Ramp-Up*, 2013
2. J. Heres, (Master thesis Universiteit Utrecht:) *2D theory and simulations of Neoclassical Tearing Modes*, 2013

Book chapter: 1

1. B. van Es, B. Koren, H.J. de Blank, *Part B: Finite-Difference Methods for Extremely Anisotropic Diffusion*, *Advanced Numerical Methods for Complex Environmental Models: Needs and Availability*, Bentham Science, 978-1-60805-778-8, 2013, 29-52

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1. B. Baiocchi, P. Mantica, C. Giroud, T. Johnson, V. Naulin, A. Salmi, T. Tala, M. Tsalas, *Discriminating the role of rotation and its gradient in determining ion stiffness mitigation in JET*, *Plasma Phys. Control. Fusion* 55 (2013) 025010
2. M.N.A. Beurskens, L. Frassinetti, C. Challis, T. Osborne, P.B. Snyder, B. Alper, C. Angioni, C. Bourdelle, P. Buratti, F. Crisanti et al., *Comparison of hybrid and baseline ELMy H-mode confinement in JET with the carbon wall*, *Nucl. Fusion* 53 (2013) 013001
3. H. Boessenkool, D.A. Abbink, C.J.M. Heemskerk, M. Steinbuch, M.R. de Baar, J.G.W. Wildenbeest, D. Rondan, J.F. Koning, *Analysis of human-in-the-loop tele-operated maintenance inspection tasks using VR*, *Fusion Eng. Des.* 88 (2013) 2164 - 2167
4. H. Boessenkool, D.A. Abbink, C.J.M. Heemskerk, F.C.T. van der Helm, J.G.W. Wildenbeest, *A Task-Specific Analysis of the Benefit of Haptic Shared Control During Tele-Manipulation*, *IEEE Trans. Haptics* 6 (2013) 2-12
5. D.P. Borgers, M. Lauret, M.R. de Baar, *Kalman filters for real-time magnetic island phase tracking*, *Fusion Eng. Des.* 88 (2013) 2922 - 2932
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39. P.C. de Vries, M. Baruzzo, G.M.D. Hogeweij, S. Jachmich, E. Joffrin, P.J. Lomas, A. Murari, I. Nunes, C. Reux, J. Vega et al., *Disruption causes during first operations with the JET ITER-like wall, 40th EPS Conference on Plasma Physics (2013) P5.166*
40. P.C. de Vries, A.C.C. Sips, H.T. Kim, P.J. Lomas, F. Mavigilia, R. Albanese, I. Coffey, E. Joffrin, M. Lehnen, M. O'Mulane et al., *Comparison of Plasma Breakdown with a Carbon and ITER-like Wall, Proceedings of the 24th IAEA Fusion Energy Conference, San Diego, USA (2013) EXD/4-2*
41. H. Weisen, Y. Camenen, A. Salmi, M. Gelfusa, P. de Vries, M. Maslov, T. Tala, M. Beurskens, C. Giroud, *Non-diffusive Momentum Transport in JET H-mode Regimes: Modeling and Experiment, Proceedings of the 24th IAEA Fusion Energy Conference, San Diego, USA (2013) TH/P2-17*
42. E. Westerhof, M.E. Austin, S. Kubo, Y.R. Lin-Liu, B. Plaum, *Summary of EC-17: the 17th Joint Workshop on Electron Cyclotron Emission and Electron Cyclotron Resonance Heating (Deurne, The Netherlands, 7-10 May 2012), Nuclear Fusion 53 (2013) 027002*
43. E. Westerhof, J. Pratt, *Expression of electron cyclotron current drive in plasma fluid models, 40th EPS Conference on Plasma Physics (2013) P2.150*

Invited lectures at conferences and meetings: 15

1. *International Conference on Fusion reactor Diagnostics, 2013/09/09, Varenna, Italy, M.R. de Baar, In-line ECE for MHD control on DEMO*
2. *Physics@FOM Veldhoven 2013, 2013/01/22, Veldhoven, Netherlands, I. Classen, Physics and control of edge localized modes in tokamaks, F08.04*
3. *Rijksuniversiteit Gent, Department of Applied Physics, 2013/11/18, Gent, Belgium, A.J.H. Donné, Plasma diagnostics in view of ITER*
4. *16th International Symposium on Laser-Aided Plasma Diagnostics (LAPD 2013), 2013/09/22, Madison, WI, USA, A.J.H. Donné, From present fusion devices to DEMO: a changing role between diagnostic and modeling, Sub(29)*
5. *International Conference on Fusion reactor Diagnostics, 2013/09/09, Varenna, Italy, A.J.H. Donné, Introduction to diagnostics and control for DEMO*
6. *Institute of Plasma Physics of the Chinese Academy, 2013/01/10, Hefei, China, A.J.H. Donné, Advanced control of MHD modes in burning plasmas*
7. *South-Western Institute of Physics, 2013/01/07, Chengdu, China, A.J.H. Donné, Advanced control of MHD modes in burning plasmas*
8. *40th EPS Conference on Plasma Physics, 2013/07/01, Espoo, Finland, M. Garcia-Munoz, S. Akaslampolo, O. Asunta, J. Boom, I.G.J. Classen, R. Dux, C. Fuchs, B. Geiger, M. Holzl, T.E. Evans et al., Fast-ion losses induced by ELMs and externally applied magnetic perturbations in the ASDEX Upgrade tokamak*
9. *40th EPS Conference on Plasma Physics, 2013/07/01, Espoo, Finland, H.T. Kim, A.C.C. Sips, P.C. de Vries, JET-EFDA contributors, Simulation of plasma formation in magnetized plasmas and the influence of plasma facing components, I4.312*
10. *11th International Colloquium on Atomic Spectra and Oscillator Strengths for Astrophysical and Laboratory Plasmas (ASOS-*

- 11), 2013/08/05, Mons, Belgium, O. Marchuk, Y. Ralchenko, I. Bespamyatnov, E. Delabie, R. Dux, D.R. Schultz, TEXTOR Team, ASDEX Upgrade team, *Complex spectra from neutral beams in fusion plasmas*, IT-09
11. Lorentz Workshop Modeling Kinetic Aspects of Global MHD Modes, 2013/12/02, Leiden, Netherlands, J. Pratt, E. Westerhof, *Tutorial: Incorporating kinetic aspects of RF current drive in MHD simulation with a focus on ECCD stabilization of tearing modes*, (6)
 12. 15th CCFE European Fusion Theory Conference, 2013/09/23, Oxford, UK, D. Told, J. Citrin, C. Bourdelle, J.W. Haverkort, G.M.D. Hogeweij, F. Jenko, P. Mantica, M.J. Pueschel, JET-EFDA contributors, *Ion temperature profile stiffness: non-linear gyrokinetic simulations and comparison with experiment*, 16
 13. 55th Annual Meeting of the APS Division of Plasma Physics, 2013/11/11, Denver, CO, USA, P.C. de Vries, *The influence of an ITER-like wall on disruptions at JET*, DPP13-2013-000269
 14. Workshop on theory and modelling of disruptions, 2013/07/18, Princeton, USA, P.C. de Vries, *Development of disruptions in the presence of the ITER-like wall at JET*
 15. ESF Exploratory Workshop on Multi-Scale Methods for Wave and Transport Processes in Fusion Plasmas: The Legacy of Grigory Pereverzev, 13 - 16 October 2013, Garching, Germany, E. Westerhof, *Modeling of Electron Cyclotron Current Drive applied for the suppression of magnetic islands in tokamaks*

Other oral and poster presentations at (international) conferences and meetings: 57

1. Physics@FOM Veldhoven 2013, 2013/01/22, Veldhoven, Netherlands, B. Ayten, E. Westerhof, *Quasi-linear effects in electron cyclotron current drive applied for the stabilization of magnetic islands in tokamaks*, Oral, PA10.04
2. 32nd Benelux Meeting on Systems and Control, 2013/03/26, Houffalize, Belgium, M. van Berkel, G. Vandersteen, M.R. de Baar, *Identification of heat transport in fusion plasmas*, Oral, WEP03-3
3. Physics@FOM Veldhoven 2013, 2013/01/22, Veldhoven, Netherlands, M. van Berkel, D. Hogeweij, G. Vandersteen, M. de Baar, *Determination of localized heat transport in fusion plasmas*, Poster, P08.10
4. 15th CCFE European Fusion Theory Conference, 2013/09/23, Oxford, UK, H.J. de Blank, W. Weymiens, D. Zhelyazov, G.M.D. Hogeweij, R. J., *Radially resolved bifurcation theory for the dynamics of L-H-mode transitions*, Poster, P19
5. 11th Carolus Magnus Summer School on Plasma Physics, 2013/08/26, Bad Honneff, Germany, H.J. de Blank, *MHD instabilities in tokamaks*, Oral
6. 11th Carolus Magnus Summer School on Plasma Physics, 2013/08/26, Bad Honneff, Germany, H.J. de Blank, *Plasma equilibrium in tokamaks*, Oral
7. 11th Carolus Magnus Summer School on Plasma Physics, 2013/08/26, Bad Honneff, Germany, H.J. de Blank, *Guiding center motion*, Oral
8. 11th International Symposium on Fusion Nuclear Technology ISFNT-11, 2013/09/16, Barcelona, Spain, H. Boessenkool, J. Thomas, D.A. Abbink, C.J.M. Heemskerk, M. de Baar, M. Steinbuch, *Human-in-the-loop tele-operated maintenance: what can ITER learn from JET?*, Poster, P1-150
9. 21th European Fusion Physics Workshop, 2013/12/09, Ringsted, Danmark, H. van den Brand, M.R. de Baar, N.J. Lopes Cardozo, E. Westerhof, *Diagnostics for NTM control*, Oral
10. 32nd Benelux Meeting on Systems and Control, 2013/03/26, Houffalize, Belgium, H. van den Brand, M.R. de Baar, W.A. Bongers, *Control of magnetic islands in fusion energy reactors*, Oral, WEP03-2
11. Physics@FOM Veldhoven 2013, 2013/01/22, Veldhoven, Netherlands, H. van den Brand, E. Westerhof, M. de Baar, N. Lopes Cardozo, *Evaluating magnetic instability detection algorithms for ITER*, Oral, PA10.03
12. 55th Annual Meeting of the APS Division of Plasma Physics, 2013/11/11, Denver, CO, USA, J. Citrin, C. Bourdelle, J. Garcia, J.W. Haverkort, G.M.D. Hogeweij, F. Jenko, T. Johnson, P. Mantica, M.J. Pueschel, D. Told et al., *Nonlinear stabilization of tokamak microturbulence by fast ions*, Oral, NO6.00006
13. ITPA Integrated Operation Scenarios Topical Group, 10th meeting, 2013/04/15, Cadarache, France, J. Citrin, J.F. Artaud, C. Bourdelle, P. Cottier, D.F. Escande, J. Garcia, Ö.D. Gürçan, D.R. Hatch, J.W. Haverkort, J. Hobirk et al., *Effect of magnetic geometry, rotation, and beta on hybrid scenarios*, Oral
14. Physics@FOM Veldhoven 2013, 2013/01/22, Veldhoven, Netherlands, J. Citrin, C. Bourdelle, P. Cottier, D.F. Escande, O.D.

- Gurcan, D.R. Hatch, J.W. Haverkort, G.M.D. Hogeweij, F. Jenko, M.J. Pueschel et al., *Quasi-linear and non-linear transport modelling of fusion devices*, Poster, P08.08
15. 14th International Workshop on H-mode Physics and Transport Barriers, 2013/10/02, Fukuoka, Japan, E. Delabie, Edge ion profile dynamics during the L-H and H-L transition at JET, Poster, P02-03
 16. Physics@FOM Veldhoven 2013, 2013/01/22, Veldhoven, Netherlands, E. Delabie, T.M. Biewer, N. Hawkes, E. Solano, K. Verhaegh, P. de Vries, Braking of plasma rotation in the edge of JET, Oral, PA10.06
 17. ITER Scenario Modelling Group Working Session, 2013/06/03, Cadarache, France, J. van Dongen, G.M.D. Hogeweij, F. Felici, Numerical optimization of the actuator trajectories in ITER hybrid scenario, Oral
 18. 11th Carolus Magnus Summer School on Plasma Physics, 2013/08/26, Bad Honneff, Germany, A.J.H. Donné, Plasma diagnostics in view of ITER, Oral
 19. 55th Annual Meeting of the APS Division of Plasma Physics, 2013/11/11, Denver, CO, USA, B. van Es, B. Koren, H.J. de Blank, Finite Volume Scheme for Anisotropic Diffusion, Poster, JP8.00122
 20. 25th Symposium Plasma Physics and Radiation Technology, 2013/03/05, Lunteren, The Netherlands, B. van Es, B. Koren, H.J. de Blank, Finite Volume Scheme for Anisotropic Diffusion, Poster, A5
 21. 11th International Symposium on Fusion Nuclear Technology ISFNT-11, 2013/09/16, Barcelona, Spain, G. Grossetti, G. Aiello, R. Chavan, R. Geßner, T. Goodmann, C.J.M. Heemskerk, A. Meier, D.M.S. Ronden, T. Scherer, S. Schreck et al., ITER EC H&CD Upper Launcher: Design Options and Remote Handling Issues of the Waveguide Assembly, Poster, P1-152
 22. 16th International Symposium on Laser-Aided Plasma Diagnostics (LAPD 2013), 2013/09/22, Madison, WI, USA, J. Hawke, R. Scannell, R. Huxford, J. Harrison, P. Bohm, Outline of optical design and viewing geometry for divertor Thomson scattering on MAST Upgrade, Poster, P22
 23. ITPA Integrated Operation Scenarios Topical Group, 11th meeting, 2013/10/07, Fukuoka, Japan, G.M.D. Hogeweij, G. Calabro, C.F. Maggi, N. Hawkes, E. Joffrin, A. Loarte, A.C.C. Sips, F.G. Rimini, E. Barbato, M. Beurskens et al., Tungsten peaking in JET current ramp-up and consequences for ITER, Oral
 24. 14th International Workshop on H-mode Physics and Transport Barriers, 2013/10/02, Fukuoka, Japan, G.M.D. Hogeweij, Modelling of ITER-like current ramps in JET with ILW: lessons for ITER regarding H-mode and I i control, Poster, P06-02
 25. 11th Carolus Magnus Summer School on Plasma Physics, 2013/08/26, Bad Honneff, Germany, G.M.D. Hogeweij, Degraded confinement and turbulence in tokamak experiments, Oral
 26. Joint meeting of ITER Scenario Modelling Group and ITER IO, 2013/06/06, Cadarache, France, G.M.D. Hogeweij, G. Calabro, A.C.C. Sips, I.A. Voitsekhovitch, JET-EFDA contributors, ITM-TF ITER Scenario Modelling Group, Current ramp up in ITER: effects of impurity density, Oral
 27. ITER Scenario Modelling Group Working Session, 2013/06/03, Cadarache, France, G.M.D. Hogeweij, G. Calabrò, A.C.C. Sips, I.A. Voitsekhovitch, JET-EFDA contributors, ITM-TF ITER Scenario Modelling Group, Impact of W on current ramp-up phase in JET and ITER, Oral
 28. ITPA Integrated Operation Scenarios Topical Group, 10th meeting, 2013/04/15, Cadarache, France, G.M.D. Hogeweij, G. Calabro, A.C.C. Sips, I.A. Voitsekhovitch, ITM-TF ITER Scenario Modelling Group, Role of impurities in ITER-like ramp-up in JET, Oral
 29. 25th Symposium Plasma Physics and Radiation Technology, 2013/03/05, Lunteren, The Netherlands, F. Jaulmes, Sawtooth oscillations and energetic ions in a fusion plasma, Poster, A16
 30. Physics@FOM Veldhoven 2013, 2013/01/22, Veldhoven, Netherlands, F. Jaulmes, E. Westerhof, Sawtooth oscillations and energetic particles in a fusion plasma, Poster, P08.03
 31. 25th Symposium Plasma Physics and Radiation Technology, 2013/03/05, Lunteren, The Netherlands, A. Kappatou, R.J.E. Jaspers, R.M. McDermott, R. Dux, Alpha particle detection with Charge Exchange Recombination Spectroscopy, Oral, O6
 32. 32nd Benelux Meeting on Systems and Control, 2013/03/26, Houffalize, Belgium, M. Lauret, H. Nijmeijer, G.J.F. van Heijst, L. Kamp, M.R. de Baar, Stabilization of vortex patterns, Oral, WEP05-1
 33. 25th Symposium Plasma Physics and Radiation Technology, 2013/03/05, Lunteren, The Netherlands, M. Lauret, M.R. de Baar, E. Westerhof, G. Witvoet, M. Steinbuch, Injection locking of the sawtooth period by means of modulated EC current drive, Oral
 34. Seminar Mediterranean Institute of Advanced Study, University of Aix-Marseille, 2013/06/04, Marseille, France, X. Litaudon, I. Voitsekhovitch, J.F. Artaud, P. Belo, J. Bizarro, T. Casper, J. Citrin, E. Fable, J. Ferreira, J. Garcia et al., Modelling of hybrid

- scenario: from present-day experiments toward ITER, Oral
35. 32nd Benelux Meeting on Systems and Control, 2013/03/26, Houffalize, Belgium, B. Maljaars, F. Felici, M.R. de Baar, M. Steinbuch, Model Predictive Control of q-profile in ITER hybrid mode, Oral, WEPO3-1
 36. 14th International Conference on Plasma-Facing Materials and Components for Fusion Applications PFMC-14, 2013/05/13, Julich, Germany, G.F. Matthews, S. Brezinsek, I. Chapman, J. Hobirk, L.D. Horton, C. Maggi, I. Nunes, F.G. Rimini, G. Sips, P. de Vries et al., The next phase of JET operation with the ITER-like Wall, Oral, Contributed talk, C18
 37. Physics@FOM Veldhoven 2013, 2013/01/22, Veldhoven, Netherlands, D. Moseev, B. Geiger, E. Strumberger, Impact of neoclassical tearing modes on confined fast ions in fusion plasmas, Poster, P08.05
 38. 11th International Symposium on Fusion Nuclear Technology ISFNT-11, 2013/09/16, Barcelona, Spain, J. van Oosterhout, C.J.M. Heemskerck, J.F. Koning, D.M.S. Ronden, M. de Baar, Interactive Virtual Mock-ups for Remote Handling Compatibility Assessment of Heavy Components, Poster, P1-145
 39. JOREK meeting FOM-IRFM-IO-JET-IPP, 2013/07/05, Nieuwegein, Netherlands / Cadarache, France / Garching, Germany, J. Pratt, E. Westerhof, ECCD Stabilization of Tearing Modes, Oral
 40. 2013 International Sherwood Fusion Theory Conference, 2013/04/15, Santa Fe, NM, USA, J.L. Pratt, E. Westerhof, JOREK simulation of tearing mode suppression by ECCD, Poster, PIII-04
 41. 25th Symposium Plasma Physics and Radiation Technology, 2013/03/05, Lunteren, The Netherlands, J. Pratt, E. Westerhof, JOREK simulation of neoclassical tearing mode suppression with ECCD, Poster, A27
 42. Physics@FOM Veldhoven 2013, 2013/01/22, Veldhoven, Netherlands, J.L. Pratt, E. Westerhof, Simulation of suppression of neoclassical tearing modes with ECCD, Poster, P08.01
 43. 11th International Symposium on Fusion Nuclear Technology ISFNT-11, 2013/09/16, Barcelona, Spain, D. Ronden, B. Elzendoorn, T. Goodman, G. Grossetti, C. Heemskerck, J. van Oosterhout, P. Spaeh, S. Schreck, D. Strauss, ITER EC H&CD Upper Launcher: Integration of Remote Handling features, Poster, P3-007
 44. 14th International Conference on Plasma-Facing Materials and Components for Fusion Applications PFMC-14, 2013/05/13, Julich, Germany, M. Sertoli, J.C. Flannegan, A. Cackett, E. Hodille, P. de Vries, I.H. Coffey, B. Sieglin, S. Brezinsek, G.F. Matthews, J.W. Coenen et al., Transient impurity events in JET with the new ITER-like wall and their impact on plasma operation, Poster, A121
 45. US-EU Joint Transport Task Force Workshop, 2013/04/08, Santa Rosa, CA, USA, H.J. Sun, Z.B. Shi, C. Gao, X.T. Ding, L.H. Yao, J.E. Rice, P.H. Diamond, G.M.D. Hogeweij, J. Citrin, HL-2A, C-Mod teams, DIFFER group, Understanding the Dynamics of Cold Pulse Nonlocality Phenomena, Oral
 46. ITER IO, 2013/08/30, Cadarache, France, I. Voitsekhovitch, J. Garcia, B. Baiocchi, E. Barbato, P. Belo, J. Bizarro, J. Citrin, E. Fable, J. Ferreira, L. Garzotti et al., Modelling of ITER hybrid and H-mode scenarios, Oral
 47. ITPA Integrated Operation Scenarios Topical Group, 10th meeting, 2013/04/15, St Paul Lez Durance, France, I. Voitsekhovitch, P. Belo, J. Bizarro, J. Citrin, J. Garcia, L. Garzotti, J. Hobirk, G.M.D. Hogeweij, I. Ivanova-Stanik, F. Köchl et al., Modelling of particle transport and density effects in present experiments and projection to ITER, Oral
 48. 25th Symposium Plasma Physics and Radiation Technology, 2013/03/05, Lunteren, The Netherlands, R.J. Voorhoeve, F.A.A. Felici, M.R. de Baar, M.F.M. De Bock, Fast 2-D equilibrium reconstruction for tokamak transport calculations, Poster, B21
 49. 55th Annual Meeting of the APS Division of Plasma Physics, 2013/11/11, Denver, CO, USA, P.C. de Vries, M. Baruzzo, G.M.D. Hogeweij, S. Jachmich, E. Joffrin, P.J. Lomas, G.F. Matthews, A. Murari, I. Nunes, T. Pütterich et al., The influence of an ITER-like wall on disruptions at JET, Poster
 50. ITPA MHD, disruptions and fast particles Topical Group, 21st meeting, 2013/04/22, Culham, United Kingdom, P.C. de Vries, Disruption occurrence during first operations with the ITER-like wall at JET, Oral
 51. Physics@FOM Veldhoven 2013, 2013/01/22, Veldhoven, Netherlands, P. de Vries, Characterization of plasma breakdown in the JET tokamak, Poster, P08.02
 52. 11th Carolus Magnus Summer School on Plasma Physics, 2013/08/26, Bad Honneff, Germany, E. Westerhof, Current drive, Oral
 53. 11th Carolus Magnus Summer School on Plasma Physics, 2013/08/26, Bad Honneff, Germany, E. Westerhof, Electron Cyclotron waves, Oral

54. Seminar IPP Garching, 2013/05/06, Garching, Germany, W. Weymiens, H.J. de Blank, G.M.D. Hogeweij, L-H transitions and bifurcations, Oral
55. FOM Programme 120 Progress Meeting, 2013/03/25, Eindhoven, The Netherlands, W. Weymiens, H.J. de Blank, G.M.D. Hogeweij, S. Paquay, L-H transitions and bifurcations, Oral
56. 25th Symposium Plasma Physics and Radiation Technology, 2013/03/05, Lunteren, The Netherlands, W. Weymiens, H.J. de Blank, G.M.D. Hogeweij, S. Paquay, Bifurcation analysis of L-H transition models for fusion plasmas, Poster, B14
57. 25th Symposium Plasma Physics and Radiation Technology, 2013/03/05, Lunteren, The Netherlands, D. Zhelyazov, D. Han-Kwan, J. Rademacher, Global stability and local bifurcations in a two-fluid model for Tokamak plasma, Poster, B10

Public events: 14

1. Symposium van studievereniging Arago van de Universiteit Twente, 2013/12/03, Enschede, Netherlands, M.R. de Baar, All about energy: Charging to higher powers
2. Discovery festival 2013, 2013/09/27, Rotterdam, Netherlands, M.R. de Baar, Orde scheppen in de chaos
3. Marie Curie Symposium 2013 "Light Matters", 2013/05/31, Nijmegen, Netherlands, M.R. de Baar, Plasma controle (wie het kleine niet eert...)
4. 2e Nationaal Congres Onderwijs & Sociale Media, Congresdag HO, 2013/05/17, Amsterdam, Netherlands, M.R. de Baar, Social Media; no pain, no gain. Overpeinzingen van een beroepsnerd
5. Symposium Werktuigkundige Studievereniging Simon Stevin 2013: Technology to the Limit, 2013/05/15, Eindhoven, Netherlands, M.R. de Baar, A track-and-kill system for magnetic islands in nuclear fusion reactors
6. Hightech Systems 2013 International Conference and Exhibition on Mechatronics and Precision Technology, 2013/04/25, Eindhoven, Netherlands, M.R. de Baar, Remote maintenance in ITER
7. Cosmicus college Informatiesessie voor 5 en 6 VWO-scholieren, 2013/03/20, Rotterdam, Netherlands, M.R. de Baar, Controle van de kernfusiebrandstof
8. Nederland innoveert! Nationaal techniekevent, 2013/02/02, Eindhoven, Netherlands, M.R. de Baar, Nederland innoveert in kernfusie
9. Lectures 'This week's discovery' of the Science Faculty of Leiden University, 2013/12/03, Leiden, Netherlands, J. Citrin, Shake, rattle and roll: new discoveries in fusion plasma turbulence
10. Haagse Hogeschool, 2013/10/14, Delft, Netherlands, A.J.H. Donné, Fusion: harnessing the energy of the sun
11. KIVI NIRIA (Afdeling voor Electrotechniek) Lezing: Kernfusie en Biobased Materials na 2050, 2013/04/03, Den Haag, Netherlands, A.J.H. Donné, Nuclear Fusion from promise to reality
12. Fusion Road Show - Fusion Days 2013, Antwerp University, 2013/11/21, A.P. Visser, F.T.M.E. de Vries
13. Fusion Road Show - KIJK Live science café, Beurs van Berlage, Amsterdam, 2013/11/05, A.P. Visser, Fusion Road Show
14. Fusion Road Show - Robeco Investor's Day, Van Nelle Fabriek, Rotterdam, 2013/11/20, F.T.M.E. de Vries

Media: 14

1. DIFFER werkt aan plasma-controlesysteem voor fusiereactor ITER, www.engineersonline.nl, 2013/05/01, Interview with M.R. de Baar
2. Hybride scenario kernfusie geoptimaliseerd, www.engineeringnet.be, 2013/02/21, Interview with J. Citrin
3. ITER, een project aan de rand van de wetenschap, Reformatorisch Dagblad, 2013/02/07, Interview with General coverage
4. Coriolis effect can stabilise plasma in fusion reactors, Peakoil.com, 2013/03/20, Interview with J.W. Haverkort
5. Willem Haverkort over kernfusie in De Wereld Leert Door, NWO.nl, 2013/01/17, Interview with J.W. Haverkort
6. Willem Haverkort in De Wereld Leert Door, CWI.nl, 2013/01/15, Interview with J.W. Haverkort
7. Onderhoud troef bij kernfusiereactor Iter, *Mechatronica en Machinebouw*, 03/2013, Interview with D.M.S. Ronden, C.J.M. Heemskerk
8. Nederland vist achter het net bij bouw kernfusiereactor, *Financieel Dagblad*, 2013/06/07, Interview with A.G.A. Verhoeven
9. VARA / De Wereld Leert Door, 2013/01/15, J.W. Haverkort, Kernfusie met Willem Haverkort

10. *www.kennislink.nl*, 2013/05/22, *Waarom we een zon op aarde bouwen*
11. *Reformatorisch Dagblad*, 2013/02/06, *Kernfusiereactor ITER hing aan een zijden draadje*
12. *De Ingenieur*, 2013/10/11, *Logistieke nachtmerrie*, Interview with A.G.A. Verhoeven
13. *Technisch Weekblad*, 2013/05/22, *In Frankrijk verrijst 'meest complexe machine op aarde'*, Interview with F.T.M.E. de Vries
14. *BNR Nieuwsradio*, 2013/10/08, *Break-even in fusieexperiment NIF*, interview with F.T.M.E. de Vries

Solar fuels - sustainable energy storage

Book chapter: 1

1. S. Welzel, R. Engeln, J. Röpcke, *Quantum Cascade Laser Based Chemical Sensing Using Optically Resonant Cavities, Cavity-Enhanced Spectroscopy and Sensing*, Springer Berlin Heidelberg, 978-3-642-40002-5, 2013, 93-142

Invited lectures at conferences and meetings: 13

1. 18th International Summer School on Vacuum, Electron and Ion Technologies VEIT, 2013/10/07, Sozopol, Bulgaria, W.A. Bongers, A.P.H. Goede, M.F. Graswinckel, S. Welzel, M. Leins, J. Kopecki, A. Schulz, M. Walker, M.C.M. van de Sanden, *Developments in power efficient dissociation of CO₂ using non-equilibrium plasma activation*, IL-20
2. iPlasmaNano-IV 4th international symposium on plasma nanoscience, 2013/08/25, Asilomar, CA, USA, I. Dogan, M.C.M. van de Sanden, *Remote Plasma Processing of Silicon Nanocrystals: Synthesis and Quantitative Analysis*
3. Chemical & Biological Engineering CBE Shell Seminar Series, Colorado School of Mines, 2013/11/01, Illinois St. Golden, CO, USA, M.C.M. van de Sanden, *Energy storage in CO₂ Neutral Fuels: a plasma perspective*
4. 18th International Summer School on Vacuum, Electron and Ion Technologies VEIT, 2013/10/07, Sozopol, Bulgaria, M.C.M. van de Sanden, *An out of equilibrium route towards solar fuels: the case for non-thermal plasma*, IL-21
5. 66th Annual Gaseous Electronics Conference, 2013/09/30, Princeton, NJ, USA, M.C.M. van de Sanden, *Energy storage in Solar Fuels: a plasma perspective*
6. 66th Annual Gaseous Electronics Conference, 2013/09/30, Princeton, NJ, USA, M.C.M. van de Sanden, *Developments in Power efficient dissociation of CO₂ using non-equilibrium plasma activation*, KW3.00001
7. 2nd Summer School on 'Catalysis for Sustainability', 2013/06/23, Kerkrade, Netherlands, M.C.M. van de Sanden, *An out of equilibrium route towards solar fuels: the case for non-thermal plasma*, L4
8. Mikrocentrum Themadag Atmospheric Plasma, 2013/05/07, Eindhoven, Netherlands, M.C.M. van de Sanden, *The Future of Atmospheric Plasma*
9. Power-To-Gas seminar, 2013/03/20, Arnhem, Netherlands, M.C.M. van de Sanden, *Power efficient plasma activation of CO₂: a novel route towards energy storage in chemical bonds*
10. Ecole Polytechnique, Conférence de l'Institut Coriolis pour l'Environnement, 2013/02/11, Paris, France, M.C.M. van de Sanden, *Sustainable energy storage in chemical fuels for CO₂ neutral energy generation: a plasma perspective*
11. ISPlasma2013 5th International Symposium on Advanced Plasma Science, 2013/01/28, Nagoya, Japan, M.C.M. van de Sanden, *Power efficient plasma activation of CO₂ Fra-A011A*
12. Mikrocentrum Themadag Atmospheric Plasma, 2013/05/07, Mol, Belgium, H.W. de Vries, *Atmospheric Pressure Glow Plasma for Roll to Roll Processing*
13. 18th International Summer School on Vacuum, Electron and Ion Technologies VEIT, 2013/10/07, Sozopol, Bulgaria, S. Welzel, F. Brehmer, M.C.M. van de Sanden, R. Engeln, *Time-resolved diagnostics applied to non-equilibrium molecular plasmas at atmospheric pressures*, IL-17

Other oral and poster presentations at (international) conferences and meetings: 43

1. 16th Workshop on the Exploration of Low Temperature Plasma Physics WELTPP-16, 2013/11/21, Kerkrade, Netherlands, W.A. Bongers, A.P.H. Goede, M.F. Graswinckel, S. Welzel, M. Leins, J. Kopecki, A. Schulz, M. Walker, M.C.M. van de Sanden, *Developments in efficient dissociation of CO₂ using nonequilibrium plasma activation*, Poster
2. 25th Symposium Plasma Physics and Radiation Technology, 2013/03/05, Lunteren, The Netherlands, W.A. Bongers, A.P.H. Goede, M.F. Graswinckel, M. Leins, J. Kopecki, A. Schulz, M. Walker, M.C.M. van de Sanden, *Developments in Power efficient dissociation of CO₂ using non-equilibrium plasma activation*, Poster, A4
3. Physics@FOM Veldhoven 2013, 2013/01/22, Veldhoven, Netherlands, W. Bongers, A.P.H. Goede, M.F. Graswinckel, M. Leins, J. Kopecki, A. Schulz, M.C.M. van de Sanden, M. Walker, *Energy efficient activation of CO₂ using nonequilibrium plasma*, Poster, P08.12
4. 11th Technological Plasma Workshop, 2013/12/16, York, United Kingdom, F. Brehmer, B.L.M. Klarenaar, M.A. Damen, S. Welzel, M.C.M. van de Sanden, R. Engeln, *CO production in dielectric barrier discharges*, Oral, Session 6
5. 16th Workshop on the Exploration of Low Temperature Plasma Physics WELTPP-16, 2013/11/21, Kerkrade, Netherlands, F. Brehmer, S. Welzel, M.C.M. van de Sanden, R. Engeln, *Time-resolved emission and absorption spectroscopy in CO₂ dielectric barrier discharges*, Oral
6. 66th Annual Gaseous Electronics Conference, 2013/09/30, Princeton, NJ, USA, F. Brehmer, S. Welzel, M.C.M. van de Sanden, R. Engeln, *Plasma chemistry in CO₂ dielectric barrier discharges*, Oral, FT2.00001
7. 10th Frontiers in Low Temperature Plasma Diagnostics, 2013/04/28, Kerkrade, Netherlands, F. Brehmer, S. Welzel, H.J. van der Meiden, M.C.M. van de Sanden, R. Engeln, *Excitation mechanisms in dielectric barrier discharges containing CO₂ at atmospheric pressure*, Poster, P1-6
8. DPG - Frühjahrstagung, 2013/02/25, Jena, Deutschland, F. Brehmer, S. Welzel, S. Ponduri, M.C.M. van de Sanden, R. Engeln, *CO₂ dissociation mechanisms in atmospheric pressure dielectric barrier discharges*, Oral
9. 2013 MRS Spring Meeting & Exhibit (Materials Research Society), 2013/04/01, San Francisco, CA, USA, R.P. Chaukulkar, S.L. Weeks, K. de Peuter, M.C.M. van de Sanden, P. Stradins, S. Agarwal, *In Situ Monitoring of the Synthesis and Surface Passivation of Si Nanoparticles*, Oral, A10.03
10. 2013 MRS Spring Meeting & Exhibit (Materials Research Society), 2013/04/01, San Francisco, CA, USA, I. Dogan, R. Gresback, T. Nozaki, M.C.M. van de Sanden, *Quantitative Analysis of Size Distribution and Surface Chemistry of Silicon Nanocrystals by Using Raman Spectroscopy*, Oral, A10.02
11. 66th Annual Gaseous Electronics Conference, 2013/09/30, Princeton, NJ, USA, R. Engeln, S. Welzel, S.A. Starostin, H. de Vries, M.C.M. van de Sanden, *Plasma chemistry and scaling parameter in high-current dielectric barrier discharges used for plasma-enhanced CVD of SiO₂ on polymers*, Oral, SF2.00004
12. 10th Frontiers in Low Temperature Plasma Diagnostics, 2013/04/28, Kerkrade, Netherlands, N. den Harder, G.J. van Rooij, *Molecular spectroscopy on a magnetized hydrogen plasma*, Poster, P1-11
13. 25th Symposium Plasma Physics and Radiation Technology, 2013/03/05, Lunteren, The Netherlands, F. Brehmer, S. Welzel, H.J. van der Meiden, S. Ponduri, M.C.M. van de Sanden, R. Engeln, *Diagnostic Studies on CO₂ in Dielectric Barrier Discharges*, Oral, O11
14. 25th Symposium Plasma Physics and Radiation Technology, 2013/03/05, Lunteren, The Netherlands, N. den Harder, G.J. van Rooij, *Molecular spectroscopy on a magnetized hydrogen plasma*, Oral, O4
15. Physics@FOM Veldhoven 2013, 2013/01/22, Veldhoven, Netherlands, N. den Harder, *Quantification of tungsten sputtering by low energy argon ions in a linear plasma generator*, Poster, P08.13
16. 2013 MRS Spring Meeting & Exhibit (Materials Research Society), 2013/04/01, San Francisco, CA, USA, W.M.M. Kessels, H.B. Profijt, M.C.M. van de Sanden, *Ion Energy Control during Plasma-enhanced Atomic Layer Deposition*, Oral, UU03.03
17. 56th Annual SVC Technical Conference 2013 TechCon of the Society of Vacuum Coaters, 2013/04/20, Providence, RI, USA, W. Keuning, J.R.G. Schalken, S. Fan, S.A. Starostin, H.W. de Vries, M.C.M. van de Sanden, W.M.M. Kessels, M. Creatore, *Healing of Roll-to-Roll Atmospheric Pressure PE-CVD H₂Ovap Permeation Barriers by means of Ultra-Thin ALD Layers*, Oral, W-2
18. 16th Workshop on the Exploration of Low Temperature Plasma Physics WELTPP-16, 2013/11/21, Kerkrade, Netherlands, B.L.M. Klarenaar, F. Brehmer, S. Welzel, H.J. van der Meiden, M.C.M. van de Sanden, R. Engeln, *Rotational Raman spectroscopy on atmospheric pressure CO₂ plasmas*, Oral

19. 25th Symposium Plasma Physics and Radiation Technology, 2013/03/05, Lunteren, The Netherlands, D.M.H.G. Mestrom, S. Ponduri, S. Welzel, F. Brehmer, M.C.M. van de Sanden, R. Engeln, An investigation into plasma parameters relevant to a Dielectric Barrier Discharge, Poster, A22
20. 25th Symposium Plasma Physics and Radiation Technology, 2013/03/05, Lunteren, The Netherlands, T. Minea, N. den Harder, G.J. van Rooij, Assessing plasma flow velocities in Pilot-PSI, Poster, A23
21. AVS 60th Annual International Symposium and Exhibition, 2013/10/27, Long Beach, CA, USA, A. Perrotta, G. Aresta, W. Keuning, M.C.M. van de Sanden, W.M.M. Kessels, M. Creatore, On the Role of Nanoporosity in Moisture Permeation Barrier Layers, Oral, TF+VT-WeM6
22. 25th Symposium Plasma Physics and Radiation Technology, 2013/03/05, Lunteren, The Netherlands, S. Ponduri, D.M.H.G. Mestrom, S. Welzel, F. Brehmer, M.C.M. van de Sanden, R. Engeln, Characterization of vibrational energy distribution of ions in CO₂ DBD plasmas, Poster, A26
23. 10th Frontiers in Low Temperature Plasma Diagnostics, 2013/04/28, Kerkrade, Netherlands, G.J. van Rooij, N. den Harder, M.F. Graswinckel, Spectroscopic Characterization of the 400.9 nm Tungsten Inverse Photon Efficiency near the Ionization Threshold, Oral, T-13
24. AVS 60th Annual International Symposium and Exhibition, 2013/10/27, Long Beach, CA, USA, M.C.M. van de Sanden, A.P.H. Goede, M.F. Graswinckel, W.A. Bongers, F. Brehmer, S. Welzel, R. Engeln, Activation of CO₂ using non-equilibrium plasma: mechanisms and power efficiency, Oral, EN+AS+PS-TuA11
25. AVS 60th Annual International Symposium and Exhibition, 2013/10/27, Long Beach, CA, USA, M.C.M. van de Sanden, A.P.H. Goede, M. Graswinckel, W. Bongers, Developments in Power Efficient Dissociation of CO₂ using Non-equilibrium Plasma Activation, Oral, EN+AS+PS-TuA12
26. 21st International Symposium on Plasma Chemistry, 2013/08/04, Cairns, Australia, M.C.M. van de Sanden, Efficient nanostructuring of metals by helium plasmas: application to photocatalytic surfaces, Oral
27. 21st International Symposium on Plasma Chemistry, 2013/08/04, Cairns, Australia, M.C.M. van de Sanden, Sustainable energy storage in chemical fuels for CO₂ neutral energy generation: a plasma perspective, Oral
28. AVS 60th Annual International Symposium and Exhibition, 2013/10/27, Long Beach, CA, USA, K. Sharma, D. Deligiannis, J.W. Weber, S. Smit, A.A. Bol, M.C.M. van de Sanden, M. Creatore, R.A.C.M.M. van Swaaij, W.M.M. Kessels, Graphene as a Transparent Front Contact for Heterojunction Silicon Solar Cells, Oral, EN+AS+NS+SS-MoA9
29. AVS 60th Annual International Symposium and Exhibition, 2013/10/27, Long Beach, CA, USA, S.A. Starostin, H. de Vries, M. Creatore, M.C.M. van de Sanden, Tuning the Composition and Water Vapor Permeation Properties of the Silica-Like Films Deposited in Atmospheric Pressure High Current Dielectric Barrier Discharge, Oral, TF+VT-WeM1
30. 16th Workshop on the Exploration of Low Temperature Plasma Physics WELTPP-16, 2013/11/21, Kerkrade, Netherlands, H.W. de Vries, S.A. Starostin, S. Welzel, M. Creatore, J.B. Bouwstra, M.C.M. van de Sanden, Status and Challenges in Atmospheric Plasma and Synthesis of Thin Films on Polymer Substrates, Oral
31. AVS 60th Annual International Symposium and Exhibition, 2013/10/27, Long Beach, CA, USA, S.L. Weeks, B. Narayanan, B.N. Jariwala, B. Macco, J.W. Weber, M.C.M. van de Sanden, C.V. Ciobanu, S. Agarwal, Carbon Monoxide-induced Reduction and Healing of Graphene Oxide, Oral, GR+AS+BI+PS+SS-ThA1
32. 2013 MRS Spring Meeting & Exhibit (Materials Research Society), 2013/04/01, San Francisco, CA, USA, S.L. Weeks, B. Narayanan, B. Jariwala, B. Macco, J.W. Weber, M.C.M. van de Sanden, C.V. Ciobanu, S. Agarwal, Carbon Monoxide-induced Reduction and Healing of Graphene Oxide, Poster, P8.42
33. 11th Technological Plasma Workshop, 2013/12/16, York, United Kingdom, S. Welzel, S.A. Starostin, H. de Vries, R. Engeln, M.C.M. van de Sanden, High-current dielectric barrier discharges used for plasma-enhanced CVD of SiO₂ on polymeric substrates, Poster, P19
34. AVS 60th Annual International Symposium and Exhibition, 2013/10/27, Long Beach, CA, USA, S. Welzel, F. Brehmer, M.C.M. van de Sanden, R. Engeln, Time-resolved In Situ Quantum Cascade Laser Diagnostics Applied to Transient Molecular Plasmas, Oral, PS1-TuA12
35. 66th Annual Gaseous Electronics Conference, 2013/09/30, Princeton, NJ, USA, S. Welzel, F. Brehmer, M.C.M. van de Sanden, R. Engeln, Time-resolved in-situ quantum cascade laser absorption spectroscopy in dielectric barrier discharges, Oral, TF1.00001

Appendix B - Output Solar fuels - sustainable energy storage

36. *IEEE Pulsed Plasma & Plasma Science (PPPS2013)*, 2013/06/16, San Francisco, CA, USA, S. Welzel, F. Brehmer, R. Engeln, W.A. Bongers, M.C.M. van de Sanden, *CO₂ conversion in non-thermal plasma processes*, Oral, 7C-8
37. *IEEE Pulsed Plasma & Plasma Science (PPPS2013)*, 2013/06/16, San Francisco, CA, USA, S. Welzel, R. Engeln, S.A. Starostin, H. de Vries, M.C.M. van de Sanden, *Infrared gas phase studies and scaling parameters in PE-CVD processes at atmospheric pressure using high-current dielectric barrier discharges*, Oral, C1-1
38. *10th Frontiers in Low Temperature Plasma Diagnostics*, 2013/04/28, Kerkrade, Netherlands, S. Welzel, F. Brehmer, M.C.M. van de Sanden, R. Engeln, *Time-resolved quantum cascade laser based in-situ diagnostics applied to dielectric barrier discharges*, Poster, P2-27
39. *10th Frontiers in Low Temperature Plasma Diagnostics*, 2013/04/28, Kerkrade, Netherlands, S. Welzel, S.A. Starostin, H. de Vries, M.C.M. van de Sanden, R. Engeln, *Scaling parameter determined in high-current dielectric barrier discharges used for plasma-enhanced CVD of SiO₂ thin films*, Poster, P2-28
40. *25th Symposium Plasma Physics and Radiation Technology*, 2013/03/05, Lunteren, The Netherlands, S. Welzel, F. Brehmer, M.C.M. van de Sanden, R. Engeln, *Highly Time-Resolved in-situ Infrared Laser Studies in Dielectric Barrier Discharges*, Poster, B7
41. *DPG - Frühjahrstagung*, 2013/02/25, Jena, Deutschland, S. Welzel, S.A. Starostin, H. de Vries, M.C.M. van de Sanden, R. Engeln, *Scaling Parameter in Plasma-Enhanced CVD of SiO₂ Thin Films in Atmospheric Pressure DBDs*, Oral
42. *Physics@FOM Veldhoven 2013*, 2013/01/22, Veldhoven, Netherlands, S. Welzel, F. Brehmer, S. Ponduri, H.J. van der Meiden, M.C.M. van de Sanden, R. Engeln, *Plasma-Assisted CO₂ Reduction at Atmospheric Pressure*, Oral, PA10.05
43. *25th Symposium Plasma Physics and Radiation Technology*, 2013/03/05, Lunteren, The Netherlands, R.H.J. Westermann, R. Engeln, M.C.M. van de Sanden, *Influence of Ohmic heating in subsonic expanding Argon plasmas*, Poster, B8

Public events: 7

1. *Symposium van studievereniging Arago van de Universiteit Twente*, 2013/12/03, Enschede, Netherlands, M.C.M. van de Sanden, *Solar fuels*
2. *ASML Tech Talk*, 2013/11/26, Veldhoven, Netherlands, M.C.M. van de Sanden, *Energy storage in CO₂ Neutral Fuels*
3. *Kekulé cycle (Koninklijke Vlaamse Chemische Vereniging and Universiteit Antwerpen)*, 2013/11/19, Antwerpen, Belgium, M.C.M. van de Sanden, *Energy generation and storage: a plasma perspective*
4. *Vereniging voor Technische Physica (VvTP) Lunchlezing*, 2013/03/26, Delft, Netherlands, M.C.M. van de Sanden, *Sustainable energy storage by means of Solar Fuels*
5. *Utrechtse Natuurkundig Gezelschap*, 2013/03/05, Utrecht, The Netherlands, M.C.M. van de Sanden, *Energy research at the FOM institute DIFFER*
6. *Symposium grand societal challenges: energy and sustainability*, 2013/05/29, Eindhoven, The Netherlands, M.C.M. van de Sanden, *Why Cooperation is Essential in Energy Research*
7. *Sint-Odulphus Lyceum*, 2013/03/18, Tilburg, Netherlands, M.C.M. van de Sanden, *Kans! Lezing voor leerlingen uit bovenbouw VWO met een natuurprofiel*

Media: 12

1. *Labyrint TV*, 2013/11/24, National broadcast; online, M.C.M. van de Sanden, W.A. Bongers, *CO₂ als brandstof*
2. *Van CO₂ naar brandstof*, www.wetenschap24.nl, 2013/11/25, Interview with F.T.M.E. de Vries
3. *Profiel: Richard van de Sanden*, *Brabants Dagblad*, 2013/11/29, Interview with M.C.M. van de Sanden
4. *Fuji: drie miljoen voor onderzoek*, *Brabants Dagblad*, 2013/11/29, Interview with M.C.M. van de Sanden
5. *Van uitstoot naar brandstof*, *VPRO gids*, 2013/11/23, Interview with M.C.M. van de Sanden
6. *Nano for solar*, *New Scientist NL*, 2013/09/18, Interview with M.C.M. van de Sanden
7. *Functionele films voor duurzame energie*, www.at-aandrijftechniek.nl, 2013/06/23, Interview with M.C.M. van de Sanden
8. *Natuurkundigen 'blazen' glas op plastic*, *Technisch Weekblad*, 2013/06/22, Interview with M.C.M. van de Sanden
9. *Fujifilm en DIFFER samen op zoek naar duurzame toepassingen*, <http://www.mvonderland.nl>, 2013/06/12, Interview with M.C.M. van de Sanden
10. *Fujifilm en DIFFER samen op zoek naar duurzame toepassingen*, <http://www.duurzaamgeproduceerd.nl>, 2013/06/12,

Interview with M.C.M. van de Sanden

11. Fujifilm wil grillig plasma temmen, <http://www.utilities.nl>, 2013/06/11, Interview with M.C.M. van de Sanden
12. Fujifilm en Differ starten onderzoeksgroep, <http://www.bits-chips.nl/>, 2013/06/04, Interview with M.C.M. van de Sanden

Nanolayer surfaces and interfaces physics

PhD theses: 3

1. J. Bosgra, *Interlayer thermodynamics in nanoscale layered structures for reflection of EUV radiation*, PhD thesis at the Universiteit Twente, 2013/07/04, Promotor: F. Bijkerk
2. A.S. Kuznetsov, *Hydrogen particle and plasma interactions with heterogeneous structures*, PhD thesis at the Universiteit Twente, 2013/10/18, Promotor: F. Bijkerk
3. I.A. Makhotkin, *Structural and reflective characteristics of multilayers for 6.x nm wavelength*, PhD thesis at the Universiteit Twente, 2013/10/31, Promotor: F. Bijkerk

Book chapter: 1

1. M.A. Gleeson, H. Ueta, A.W. Kleyn, *Scattering of Hyperthermal Effusive N and N₂ Beams at Metal Surfaces, Dynamics of Gas-Surface Interactions. Atomic-level Understanding of Scattering Processes at Surfaces*, Springer Berlin Heidelberg, 978-3-642-32954-8, 2013, 349-370

Publications in peer-reviewed scientific journals: 26

1. J. Bosgra, L.W. Veldhuizen, E. Zoethout, J. Verhoeven, R.A. Loch, A.E. Yakshin, F. Bijkerk, *Interactions of C in layered Mo-Si structures*, *Thin Solid Films* 542 (2013) 210-213
2. C. Cleff, P. Groß, C. Fallnich, H.L. Offerhaus, J.L. Herek, K. Kruse, W.P. Beeker, C.J. Lee, K.-J. Boller, *Stimulated-emission pumping enabling sub-diffraction-limited spatial resolution in coherent anti-Stokes Raman scattering microscopy*, *Phys. Rev. A* 87 (2013) 033830
3. J.P. Epping, M. Kues, P.J.M. van der Slot, C.J. Lee, C. Fallnich, K.J. Boller, *Integrated CARS source based on seeded four-wave mixing in silicon nitride*, *Opt. Express* 21 (2013) 7
4. A. Gao, P.J. Rizo, E. Zoethout, L. Scaccabarozzi, C.J. Lee, V. Banine, F. Bijkerk, *Extreme ultraviolet induced defects on few-layer graphene*, *J. Appl. Phys.* 114 (2013) 044313
5. J. Gaudin, V.V. Medvedev, J. Chalupsky, T. Burian, S. Dastjani Farahani, V. Hajkova, M. Harmand, H.O. Jeschke, L. Juha, M. Jurek et al., *Photon energy dependence of graphitization threshold for diamond irradiated with intense XUV FEL pulse*, *Phys. Rev. B* 88 (2013) 060101
6. M.A. Gleeson, A.W. Kleyn, *Nitrogen interactions at metal surfaces*, *Nucl. Instr. Meth. Phys. Res. B* 317 (2013) 109-114
7. I.M.N. Groot, A.W. Kleyn, L.B.F. Juurlink, *Separating Catalytic Activity at Edges and Terraces on Platinum: Hydrogen Dissociation*, *J. Phys. Chem. C* 117 (2013) 9266-9274
- 8.
9. Guimond, D. Göbke, J.M. Sturm, Y. Romanyshyn, H. Kühlenbeck, M. Cavalleri, H.J. Freund, *Well-ordered molybdenum oxide layers on Au(111): Preparation and properties*, *J. Phys. Chem. C* 117 (2013) 8746-8757
10. A.S. Kuznetsov, M.A. Gleeson, F. Bijkerk, *Ion effects in hydrogen-induced blistering of Mo/Si multilayers*, *J. Appl. Phys.* 114 (2013) 113507
11. A.S. Kuznetsov, M.A. Gleeson, F. Bijkerk, *Hydrogen-induced blistering of Mo/Si multilayers: Uptake and distribution*, *Thin Solid*

Films 545 (2013) 571 - 579

11. C.J. Lee, P.J.M. van der Slot, K.J. Boller, A gain-coefficient switched Alexandrite laser, *J. Phys. D-Appl. Phys.* 46 (2013) 015103
12. I.A. Makhotkin, E. Zoethout, R. van de Kruijs, S.N. Yakunin, E. Louis, A.M. Yakunin, V. Banine, S. Mullender, F. Bijkerk, Short period La/B and La/NiB multilayer mirrors for similar to 6.8 nm wavelength, *Opt. Express* 21 (2013) 29894-29904
13. V.V. Medvedev, A.J.R. van den Boogaard, R. van der Meer, A.E. Yakshin, E. Louis, V.M. Krivtsun, F. Bijkerk, Infrared diffractive filtering for extreme ultraviolet multilayer Bragg reflectors, *Opt. Express* 21 (2013) 16964-16974
14. V.V. Medvedev, R.W.E. van de Kruijs, A.E. Yakshin, N.N. Novikova, V.M. Krivtsun, E. Louis, A.M. Yakunin, F. Bijkerk, Multilayer mirror with enhanced spectral selectivity for the next generation extreme ultraviolet lithography, *Appl. Phys. Lett.* 103 (2013) 221114
15. R. van der Meer, I.V. Kozhevnikov, H.M.J. Bastiaens, K.J. Boller, F. Bijkerk, Extended theory of soft x-ray reflection for realistic lamellar multilayer gratings, *Opt. Express* 21 (2013) 13105-13117
16. R. van der Meer, I. Kozhevnikov, B. Krishnan, J. Huskens, P. Hegeman, C. Brons, B. Vratzov, B. Bastiaens, K. Boller, F. Bijkerk, Single-order operation of lamellar multilayer gratings in the soft x-ray spectral range, *AIP Adv.* 3 (2013) 012103
17. S.L. Nyabero, R.W.E. van de Kruijs, A.E. Yakshin, E. Zoethout, G. von Blanckenhagen, J. Bosgra, R.A. Loch, F. Bijkerk, Interlayer growth in Mo/B₄C multilayered structures upon thermal annealing, *J. Appl. Phys.* 113 (2013) 144310
18. S.L. Nyabero, R.W.E. van de Kruijs, A.E. Yakshin, F. Bijkerk, Enhanced thermal stability of extreme ultraviolet multilayers by balancing diffusion-induced structural changes, *Appl. Phys. Lett.* 103 (2013) 093105
19. R.M. Oldenbeuving, H. Song, G. Schitter, M. Verhaegen, E.J. Klein, C.J. Lee, H.L. Offerhaus, K.J. Boller, High precision wavelength estimation method for integrated optics, *Opt. Express* 21 (2013) 17042-17052
20. R.M. Oldenbeuving, E.J. Klein, H.L. Offerhaus, C.J. Lee, H. Song, K.J. Boller, 25 kHz narrow spectral bandwidth of a wavelength tunable diode laser with a short waveguide-based external cavity, *Laser Phys. Lett.* 10 (2013) 015804
21. A.Y. Seregin, Y.A. D'Yakova, S.N. Yakunin, I.A. Makhotkin, A.S. Alekseev, V.V. Klechkovskaya, E.Y. Tereschenko, N.V. Tkachenko, H. Lemmetyinen, L.A. Feigin et al., Determination of preferential molecular orientation in porphyrin-fullerene dyad ZnDHD6ee monolayers by the X-ray standing-wave method and X-ray reflectometry, *Crystallogr. Rep.* 58 (2013) 934-938
22. R. Sobierajski, R.A. Loch, R.W.E. van de Kruijs, E. Louis, G. von Blanckenhagen, E.M. Gullikson, F. Siewert, A. Wawro, F. Bijkerk, Mo/Si multilayer-coated amplitude-division beam splitters for XUV radiation sources, *J. Synchrot. Radiat.* 20 (2013) 249-257
23. R. Sobierajski, M. Jurek, J. Chalupsky, J. Krzywinski, T. Burian, S.D. Farahani, V. Hajkova, M. Harmand, L. Juha, D. Klinger et al., Experimental set-up and procedures for the investigation of XUV free electron laser interactions with solids, *JINST* 8 (2013) P02010
24. J.M. Sturm, C.J. Lee, F. Bijkerk, Reactions of ethanol on Ru(0001), *Surf. Sci.* 612 (2013) 42-47
25. T. Zaharia, H. Ueta, A.W. Kleyn, M.A. Gleeson, Nitrogen Scattering at Ru(0001) Surfaces, *Z. Phys. Chem.* 227 (2013) 1511-1522
26. E. Zoethout, E. Louis, F. Bijkerk, Real-space insight in the nanometer scale roughness development during growth and ion beam polishing of molybdenum silicon multilayer films, *Appl. Surf. Sci.* 285, Part B (2013) 293 - 299

Publications in other journals and conference proceedings: 4

1. Q. Huang, A.J.R. van den Boogaard, R.W.E. van de Kruijs, E. Zoethout, V.V. Medvedev, E. Louis, F. Bijkerk, Suppression of long wavelength reflection from Extreme-UV multilayer optics, *Proceedings of SPIE - The International Society for Optical Engineering* 8848 (2013) 88480N
2. S.P. Huber, R.W.E. van de Kruijs, A.E. Yakshin, E. Zoethout, F. Bijkerk, Engineering optical constants for broadband single layer antireflection coatings, *Proceedings of SPIE - The International Society for Optical Engineering* 8848 (2013) 884814
3. I.A. Makhotkin, R.W.E. van de Kruijs, E. Zoethout, E. Louis, F. Bijkerk, Optimization of La/NiB multilayer mirrors for 6.x nm wavelength, *Proceedings of SPIE - The International Society for Optical Engineering* 8848 (2013) 884800
4. J.M. Sturm, F. Liu, M.L. Grecea, M.A. Gleeson, C.J. Lee, F. Bijkerk, UHV-opstelling voor het bestuderen van de contaminatie van EUV-spiegels (Translation: UHV set-up for studying contamination of EUV optics), *NEVAC blad* 51 (2013) 6-11

Invited lectures at conferences and meetings: 7

1. *2nd international workshop on Scattering of Atoms and Molecules from Surfaces (SAMS-2), 2013/11/04, Potsdam, Germany, A.W. Kley, Eley-Rideal reactions with hyperthermal N*
2. *South-West institute for Physics (SWIP), seminar, 2013/05/29, Chengdu, China, A.W. Kley, Gas-surface dynamics at hyper thermal energies*
3. *Chengdu Development Center for Science and Technology, seminar, 2013/05/28, Chengdu, China, A.W. Kley, Gas-surface dynamics for sustainability*
4. *Chengdu Green Energy Center, seminar, 2013/04/03, Chengdu, China, A.W. Kley, Gas-surface dynamics for sustainability*
5. *Gordon research Conference on Atmospheric Reentry Physics, 2013/02/03, Ventura, CA, USA, A.W. Kley, Gas-surface dynamics at hyper thermal energies*
6. *NEVAC-dag, Sciencepark Amsterdam, 2013/04/23, Amsterdam, Netherlands, E. Louis, Multilayer development for EUV lithography and beyond...*
7. *NEVAC dag 2013, 2013/04/23, Amsterdam, Netherlands, J.M. Sturm, F. Liu, M.L. Grecea, M.A. Gleeson, C.J. Lee, F. Bijkerk, UHV set-up for studying contamination of EUV optics*

Other oral and poster presentations at (international) conferences and meetings: 49

1. *Physics@FOM Veldhoven 2013, 2013/01/22, Veldhoven, Netherlands, D. Astakhov, W. Goedheer, D. Lopaev, V. Ivanov, V. Krivtsun, O. Yakushev, K. Koshelev, F. Bijkerk, 2D PIC modeling of the EUV induced hydrogen plasma and comparison to the observed carbon etching rate, Poster, P08.06*
2. *2013 SPIE International Symposium on Extreme Ultraviolet Lithography, 2013/10/06, Toyama, Japan, H.J.M. Bastiaens, C. Bruineman, B. Vratzov, E. Louis, F. Bijkerk, Transmission grating spectroscopy in the EUV and VUV, Poster*
3. *Smart Optics Systems 4th annual meeting, 2013/10/30, Delft, Netherlands, M. Bayraktar, A. Chopra, W. Wessels, F. Van Goor, G. Rijnders, F. Bijkerk, Smart Multilayer Interactive Optics for Lithography at Extreme Ultraviolet Wavelengths, Poster*
4. *2013 SPIE International Symposium on Extreme Ultraviolet Lithography, 2013/10/06, Toyama, Japan, M. Bayraktar, F. Van Goor, K.J. Boller, F. Bijkerk, Collector mirror design to separate the stray 10.6 μm CO₂ laser light from the EUV light at the intermediate focus, Oral*
5. *2013 SPIE International Symposium on Extreme Ultraviolet Lithography, 2013/10/06, Toyama, Japan, M. Bayraktar, F. Van Goor, E. Louis, K.J. Boller, F. Bijkerk, IR refocusing: collector mirror design, Oral*
6. *Physics@FOM Veldhoven 2013, 2013/01/22, Veldhoven, Netherlands, M. Bayraktar, F. Van Goor, F. Bijkerk, K.J. Boller, Reflective Pyramid Wavefront Sensor for Extreme Ultraviolet Radiation, Poster, P02.20*
7. *14th ASML Technology Conference 2013, 2013/06/20, Veldhoven, Netherlands, R.A.J.M. van den Bos, C.J. Lee, F. Bijkerk, Blister formation on multilayer mirrors due to the exposure of hydrogen, Poster*
8. *SPIE Optics + Optoelectronics Conference, 2013/04/15, Prague, Czech Republic, T. Burian, J. Gaudin, J. Chalupsky, S. Bajt, L. Vysin, N. Coppola, S. Dastjani-Farahani, H.N. Chapman, V. Hajkova, M. Harmand et al., X-ray laser-induced damage to inorganic scintillator materials, Oral, 8777-20, Session 6*
9. *MESA+ day 2013, 2013/09/16, Enschede, Netherlands, R. Coloma Ribera, J.M. Sturm, R.W.E. van de Kruijs, A. Yakshin, F. Bijkerk, Deposition and Oxidation Studies by Low-Energy Ion Scattering (LEIS), Poster*
10. *40th IOP Annual Spring Conference on Plasma Physics, 2013/03/25, York, UK, A. Dolgov, D. Lopaev, C.J. Lee, V.M. Krivtsun, O. Yakushev, F. Bijkerk, Comparison of carbon cleaning mechanisms in EUV-induced and SWD plasmas in H₂ and He environments, Poster, P.20*
11. *Physics@FOM Veldhoven 2013, 2013/01/22, Veldhoven, Netherlands, A. Dolgov, D. Lopaev, C. Lee, V. Krivtsun, K. Koshelev, O. Yakushev, F. Bijkerk, Comparison of carbon cleaning mechanisms in EUV-induced and SWD plasmas in H₂ and He environments, Poster, P08.09*
12. *Graphene International Conference 2013, 2013/04/23, Bilbao, Spain, A. Gao, P.J. Rizo, E. Zoethout, L. Scaccabarozzi, C.J. Lee, V. Banine, F. Bijkerk, Study of EUV induced defects on few-layer graphene, Poster*
13. *Physics@FOM Veldhoven 2013, 2013/01/22, Veldhoven, Netherlands, A. Gao, C.J. Lee, P.R. Diago, L. Scaccabarozzi, L. Ste-*

- vens, V. Banine, F. Bijkerk, EUV induced defects on few-layer graphene, Poster, P05.02
14. Physics@FOM Veldhoven 2013, 2013/01/22, Veldhoven, Netherlands, M. Gleeson, T. Zaharia, A. Kleyn, The role of excitation states in particle-surface interactions, Poster, P05.49
 15. Physics@FOM Veldhoven 2013, 2013/01/22, Veldhoven, Netherlands, M. Gleeson, A. Kuznetsov, F. Bijkerk, Hydrogen uptake and distribution in a multi-layered systems and related effects, Poster, P05.51
 16. 2013 SPIE International Symposium on Extreme Ultraviolet Lithography, 2013/10/06, Toyama, Japan, Q. Huang, E. Louis, S.P. Huber, V.V. Medvedev, F. Bijkerk, Spectral Purity Enhancement for the EUV source by suppressing UV Reflection from multilayer mirrors, Oral
 17. 2013 SPIE International Symposium on Extreme Ultraviolet Lithography, 2013/10/06, Toyama, Japan, Q. Huang, S.P. Huber, V.V. Medvedev, F. Bijkerk, UV spectral filtering by 3D structured EUV multilayers, Oral
 18. MESA+ day 2013, 2013/09/16, Enschede, Netherlands, Q. Huang, V.V. Medvedev, A.J.R. van den Boogaard, R.W.E. van de Kruijs, A. Yakshin, E. Zoethout, E. Louis, F. Bijkerk, Tailoring reflective properties of multilayer Extreme UV optics, Oral
 19. SPIE 8848 Advances in X-Ray/EUV Optics and Components VIII, 2013/08/25, San Diego, CA, USA, Q. Huang, V.V. Medvedev, A.J.R. van den Boogaard, R.W.E. van de Kruijs, S.P. Huber, E. Louis, F. Bijkerk, Suppression of long wavelength reflection from Extreme-UV multilayer optics, Oral, Paper 8848-21
 20. 38th International Conference on Vacuum Ultraviolet and X-ray Physics VUVX-2013, 2013/07/12, Hefei, China, Q. Huang, R.A. Loch, R. Sobierajski, R. van der Meer, I.V. Kozhevnikov, E. Louis, F. Bijkerk, Development of XUV multilayer optics for advanced spectroscopy and light applications, Oral
 21. 14th ASML Technology Conference 2013, 2013/06/20, Veldhoven, Netherlands, Q. Huang, V.V. Medvedev, A.J.R. van den Boogaard, R. van der Meer, R.W.E. van de Kruijs, S.P. Huber, H.J.M. Bastiaens, C. Bruineman, B. Vratsov, E. Louis et al., Suppression of long wavelength reflection from Extreme UV multilayer optics, Poster
 22. SPIE 8848 Advances in X-Ray/EUV Optics and Components VIII, 2013/08/25, San Diego, CA, USA, S.P. Huber, R.W.E. van de Kruijs, A.E. Yakshin, E. Zoethout, F. Bijkerk, Engineering optical constants for broadband single layer anti-reflection coatings, Poster, Paper 8848-39
 23. Surface Physics and Chemistry Laboratory seminar, Jianguyou, Sichuan, China, 2013/12/06, Jianguyou, China, A.W. Kleyn, Gas-surface dynamics for sustainability, Oral
 24. Surface Physics and Chemistry Laboratory seminar, Jianguyou, Sichuan, China, 2013/12/06, Jianguyou, China, A.W. Kleyn, Dynamics of molecular interactions at surfaces, Oral
 25. Surface Physics and Chemistry Laboratory seminar, Jianguyou, Sichuan, China, 2013/12/06, Jianguyou, China, A.W. Kleyn, Plasma-surface interaction for fusion 1 and 2, Oral
 26. AVS 60th Annual International Symposium and Exhibition, 2013/10/27, Long Beach, CA, USA, A.W. Kleyn, T. Zaharia, M.A. Gleeson, NO Formation in Eley-Rideal Reactions with Hyperthermal N Atoms, Oral, SS2-ThA12
 27. Gordon Research Conference on Dynamics at Surfaces, 2013/08/11, Newport, RI, USA, A.W. Kleyn, T. Zaharia, M.A. Gleeson, Scattering and Eley-Rideal reactions with fast N and N₂, Poster
 28. 14th ASML Technology Conference 2013, 2013/06/20, Veldhoven, Netherlands, F. Liu, J.M. Sturm, C.J. Lee, F. Bijkerk, Extreme Ultraviolet (EUV) induced surface chemistry on Ru(0001), Poster
 29. Physics@FOM Veldhoven 2013, 2013/01/22, Veldhoven, Netherlands, F. Liu, M. Sturm, E. Osorio, M. van Kampen, C. Lee, F. Bijkerk, Extreme Ultraviolet (EUV) induced surface chemistry on Ru(0001), Poster, P05.23
 30. SPIE Optics + Optoelectronics Conference, 2013/04/15, Prague, Czech Republic, R.A. Loch, R. Sobierajski, J. Bosgra, E. Louis, F. Bijkerk, Numerical study of Li₂O-based multilayeroptics for water-window wavelengthradiation, Oral, 8778-13, Session 3
 31. SPIE Optics + Optoelectronics Conference, 2013/04/15, Prague, Czech Republic, R.A. Loch, R. Sobierajski, J. Bosgra, E. Louis, F. Bijkerk, Numerical study of single shot damage thresholds of multilayer optics for high-intensity short-wavelength radiation sources, Oral, 8777-10, Session 3
 32. PTB-Seminar VUV and EUV Metrology, 2013/10/25, Berlin, Germany, E. Louis, Q. Huang, V.V. Medvedev, R.W.E. van de Kruijs, S. Huber, A.E. Yakshin, A.F.G. van der Meer, F. Bijkerk, Tuning the optical response of multilayer mirrors, Oral
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- van de Kruijs, E. Zoethout, E. Louis, F. Bijkerk, *Optimization of La/NiB multilayer mirrors for 6.x nm wavelength*, Oral, Paper 8848-22
35. 14th ASML Technology Conference 2013, 2013/06/20, Veldhoven, Netherlands, I. Makhotkin, E. Zoethout, S. Nyabero, V.V. Medvedev, R.W.E. van de Kruijs, E. Louis, A.M. Yakunin, V. Banine, S. Muellender, F. Bijkerk, *Multilayer development for the generation beyond EUV: 6.x nm*, Poster
 36. Physics@FOM Veldhoven 2013, 2013/01/22, Veldhoven, Netherlands, I. Makhotkin, S. Yakunin, E. Zoethout, E. Louis, R. van de Kruijs, F. Bijkerk, *X-ray standing wave analysis of La/B₄C multilayer mirrors*, Oral, PA18.06
 37. 2013 International Workshop in EUV and Soft X-ray Sources, 2013/11/05, Dublin, Ireland, V.V. Medvedev, A. Yakshin, R.W.E. van de Kruijs, V.M. Krivtsun, E. Louis, F. Bijkerk, *EUV optical elements with enhanced spectral selectivity for IR radiation*, Oral
 38. 2013 International Symposium on Extreme Ultraviolet Lithography, 2013/10/06, Toyama, Japan, V.V. Medvedev, A. Yakshin, R.W.E. van de Kruijs, V.M. Krivtsun, E. Louis, F. Bijkerk, *Infrared antireflective filtering for 6.x nm multilayer Bragg reflectors*, Poster
 39. SPIE 8848 Advances in X-Ray/EUV Optics and Components VIII, 2013/08/25, San Diego, CA, USA, V.V. Medvedev, F. Bijkerk, *Multilayer-based solutions for Extreme UV light with enhanced spectral purity*, Oral, Paper 8848-20
 40. Physics@FOM Veldhoven 2013, 2013/01/22, Veldhoven, Netherlands, S. Medvedev, A. Yakshin, R. van de Kruijs, V. Krivtsun, E. Louis, F. Bijkerk, *Extreme ultraviolet Bragg mirrors with suppressed infrared reflectivity properties*, Poster, P01.20
 41. 14th ASML Technology Conference 2013, 2013/06/20, Veldhoven, Netherlands, M. Pachecka, C.J. Lee, J.M. Sturm, F. Bijkerk, *Metal Hydride assisted contamination on Ru/Si surfaces*, Poster
 42. SPIE Optics + Optoelectronics Conference, 2013/04/15, Prague, Czech Republic, R. Sobierajski, R.A. Loch, E. Louis, D. Klinger, P. Dluzewski, M. Klepka, F. Bijkerk, T. Burian, J. Chalupsky, S. Dastjani-Farahani et al., *Multiple pulse damage in Mo/Si multilayeroptics irradiated by intense shortwavelength FELs*, Oral, 8777-15, Session 4
 43. M2i Conference 2013, 2013/12/09, Noordwijkerhout, Netherlands, J.M. Sturm, F. Liu, M. Pachecka, C.J. Lee, F. Bijkerk, *Oxidation and metal contamination of EUV optics*, Poster
 44. M2i Annual Conference, 2013/12/09, Noordwijkerhout, Netherlands, J.M. Sturm, F. Liu, C.J. Lee, F. Bijkerk, *(Photo)chemical reactions on EUV optical surfaces*, Oral
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 46. M2i Annual Conference, 2013/12/09, Noordwijkerhout, Netherlands, T. Zaharia, M.A. Gleeson, A.W. Kleyn, *Stability of EUV Caps Under Reactive Environments of Nitrogen: Pick-up reactions with N atoms*, Oral
 47. M2i Annual Conference, 2013/12/09, Noordwijkerhout, Netherlands, T. Zaharia, M.A. Gleeson, A.W. Kleyn, *Stability of EUV Caps Under Reactive Environments of Nitrogen*, Poster, P03.10
 48. 19th International Vacuum Congress (IVC-19), 2013/09/09, Paris, France, T. Zaharia, M.A. Gleeson, A.W. Kleyn, *Eley-Rideal reactions with N atoms*, Oral
 49. 15th European Conference on Applications of Surface and Interface Analysis (ECASIA'13), 2013/10/13, Cagliari, Sardinia, Italy, E. Zoethout, *Influence of surface morphology on angular photo-electron spectroscopy measurements of nanometer thin overlayers*