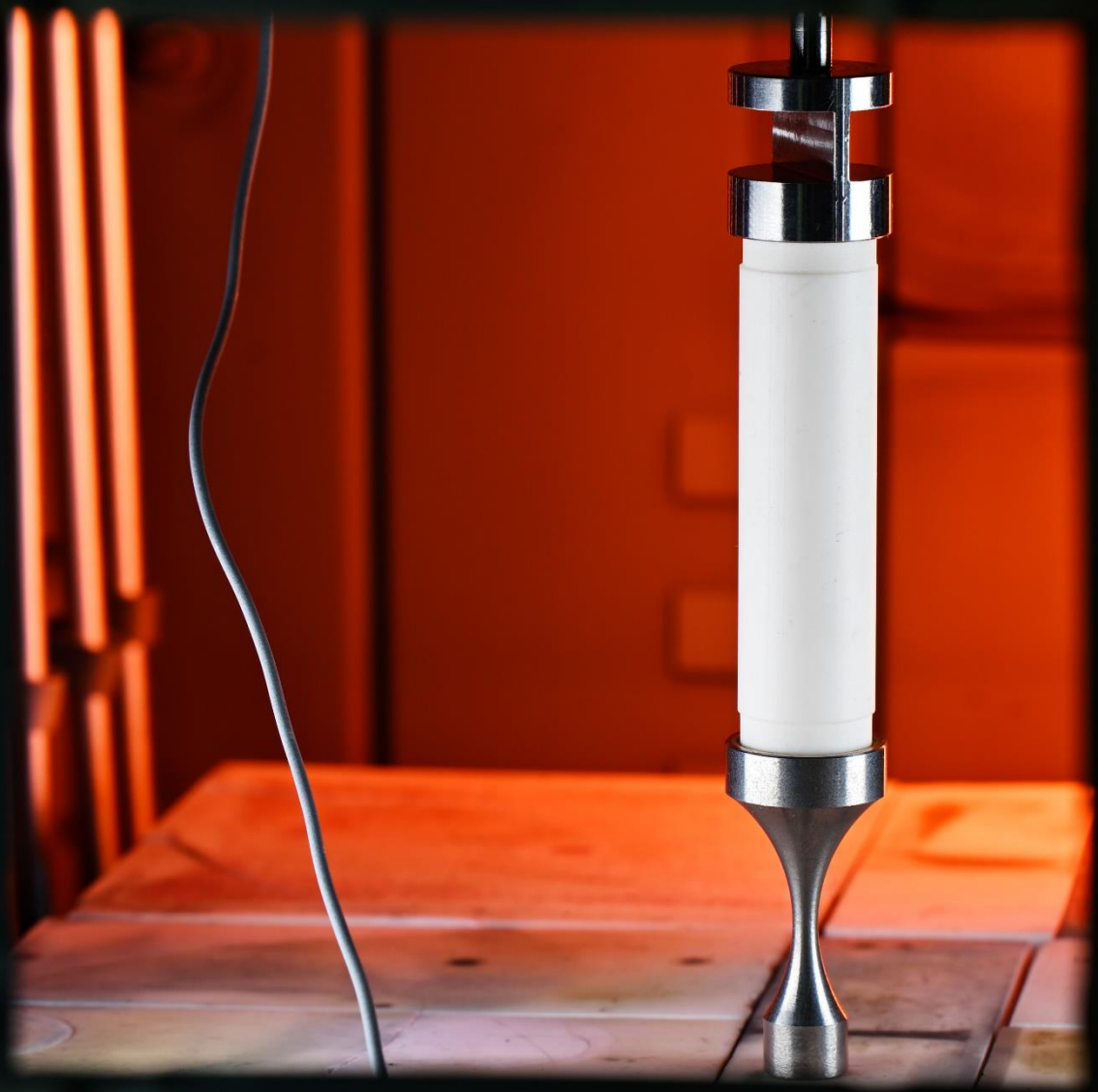
DIFFER

LISTINGS & OUTPUT 2024



Preface

The annual DIFFER *Listings & Output* document provides a comprehensive overview of the most significant outputs from our institute. It includes the following:

- PhD, MSc, and BSc theses;
- Publications in peer-reviewed scientific journals, other journals, and conference proceedings;
- Contributions by our members as guest lecturers at conferences, meetings, and seminars, including editorships;
- Posters, presentations and other talks;
- Summaries of key positions held by our staff, including editorships;
- Media appearances of our staff and institute.

The outputs are categorized according to our two primary research lines: *Fusion Energy* and *Chemical Energy*, with the output from our *Facilities & Instrumentation* department listed separately.

For interviews, news, and updates, visit: www.differ.nl
For annual reports, appendices, and this document, visit: http://www.differ.nl/about-us/annual-reports

Cover image

Vacuum soldering at high temperatures of around 1000 degrees Celsius is one of the specialties of the DIFFER workshop. This lets us create strong connections between special materials such as ceramics and metals, a capability shared by only very few companies in the country.

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1. Scientific Output DIFFER: Fusion Energy in 2024

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1. T.A. Wijkamp, *Multispectral imaging for the mitigation of tokamak damage by plasma exhaust and runaway electrons*, PhD thesis at the Eindhoven University of Technology, 2024/03/22, Promotor(s): R.J.E. Jaspers, M.R. de Baar; Co-promotor: I.G.J. Classen
2. J.T.W. Koenders, *Dynamics and control of the heat exhaust in Tokamak à Configuration Variable*, PhD thesis at the Eindhoven University of Technology, 2024/06/18, Promotor(s): M.R. de Baar; Co-promotor: M. van Berkel
3. T.F. Beernaert, *Discovering the potential of dependency structure modelling for fusion systems engineering*, PhD thesis at the Eindhoven University of Technology, 2024/07/08, Promotor(s): M.R. de Baar, L.F.P. Etman; Co-promotor: I.G.J. Classen
4. G. Snoep, *Reduced-order modeling for turbulent transport in the pedestal-forming region of tokamaks*, PhD thesis at the Eindhoven University of Technology, 2024/12/04, Promotor(s): N.J. Lopes Cardozo; Co-promotors: C. Bourdelle; J. Citrin

Master thesis & Bachelor reports: 9

1. J.K. Elenbaas, (Master thesis Eindhoven University of Technology:) *The effect of isotope exchange on deuterium retention in tungsten under ITER-like conditions*, Mentor(s): T.W. Morgan, M. Morbey, B. Tyburska-Pueschel, 2024/01/02
2. T.J.F. Korsten, (Master thesis Eindhoven University of Technology:) *The fracture behaviour and erosion of tungsten undergoing ITER-like heat loads*, Mentor(s): T.W. Morgan, 2024/01/29
3. W.M. Klip, (Master thesis Eindhoven University of Technology:) *Optimal hybrid feedforward design for pellet injection*, Mentor(s): T.O.S.J. Bosman, M. van Berkel, M.R. de Baar, 2024/04/17
4. T. van den Doel, (Master thesis Eindhoven University of Technology:) *Divertor power-sharing dynamics: in double null configuration*, Mentor(s): B. Kool, M. van Berkel, 2024/06/24
5. M.C. van Gurp, (Master thesis Eindhoven University of Technology:) *Development and implementation of advanced plasma diagnostics to study plasma–surface interactions in H2 plasmas*, Mentor(s): T.W. Morgan, 2024/07/16
6. S.J.W. van Laarhoven, (Master thesis Eindhoven University of Technology:) *Experimental and computational study on dynamic gas flow through pipes*, Mentor(s): G.L. Derks, M.R. de Baar, 2024/08/16
7. I.A.S. Savona, (Master thesis Eindhoven University of Technology:) *Towards the real-time control of divertor target conditions in the TCV: Using Kalman filters and SOLPS-ITER to observe the divertor region*, Mentor(s): M.R. de Baar, J.T. Veenendaal, M. van Berkel, 2024/09/23
8. C.P.A. Aben, (Master thesis Eindhoven University of Technology:) *A DSM-approach towards synthesised supervisory control in nuclear fusion*, Mentor(s): M.R. de Baar, 2024/11/16
9. E.B. Dinne, (Bachelor end project report Eindhoven University of Technology:) *A thermo-electric instability of a current-carrying magnetized plasma beam*, Mentor(s): H.J. de Blank, 2024/03/31

Publications in peer-reviewed scientific journals: 58

1. A. Iantchenko, M.J. Pueschel, S. Brunner, S. Coda, *Gyrokinetic turbulence modeling of a high performance scenario in JT-60SA*, Nucl. Fusion 64 (2024) 026005
2. T.A. Wijkamp, M. Hoppe, J. Decker, B.P. Duval, A. Perek, U. Sheikh, I.G.J. Classen, R.J.E. Jaspers, TCV team, *Resonant interaction between runaway electrons and the toroidal magnetic field ripple in TCV*, Nucl. Fusion 64 (2024) 016021
3. P. Manas, J.F. Artaud, C. Bourdelle, V. Ostuni, J. Morales, J. Citrin, *Maximizing the ion temperature in an electron heated plasma: from WEST towards larger devices*, Nucl. Fusion 64 (2024) 036011
4. T. Jitsuk, A. Di Siena, M.J. Pueschel, P.W. Terry, F. Midmer, E. Poli, J.S. Sarff, *Global linear and nonlinear gyrokinetic simulations of tearing modes*, Nucl. Fusion 64 (2024) 046005
5. J.P. Goedbloed, S. Poedts, *On boundary conditions for magnetohydrodynamic waves in flux tubes with a pressure jump*, Res. Notes AAS 8 (2024) 60
6. D. Terentyev, M. Wirtz, T.W. Morgan, T. Nozawa, A. Zinovev, C.C. Chang, K. Poleshchuk, J. Elenbaas, *Comparative study of ITER conform tungsten grades exposed to high heat flux and neutron irradiation damage*, Fusion Eng. Des. 200 (2024) 114200
7. L. Zanisi, A. Ho, J. Barr, T. Madula, J. Citrin, S. Pamela, J. Buchanan, F.J. Casson, V. Gopakumar, *Efficient training sets for surrogate models of tokamak turbulence with Active Deep Ensembles*, Nucl. Fusion 64 (2024) 036022
8. U. Sheikh, J. Decker, M. Hoppe, M. Pedrini, B. Sieglin, L. Simons, J.A. Cazabonne, J. Caloud, J. Cerovsky, T. Wijkamp, et al., *Benign termination of runaway electron beams on ASDEX Upgrade and TCV*, Plasma Phys. Control. Fusion 66 (2024) 035003
9. G.L. Derks, E. Westerhof, M. van Berkel, J.H. Jenneskens, J.T.W. Koenders, S. Mijin, D. Moulton, H. Reimerdes, H.C. Wu, *Multi-machine benchmark of the self-consistent 1D scrape-off layer model DIV1D from stagnation point to target with SOLPS-ITER*, Plasma Phys. Control. Fusion 66 (2024) 055004
10. W. van Uytven, W. Dekeyser, F. Subba, S. Wiesen, N. Horsten, N. Vervloesem, M. Baelmans, *Discretization error estimation for EU-DEMO plasma-edge simulations using SOLPS-ITER with fluid neutrals*, Contrib. Plasma Phys. 64 (2024) e202300125
11. J. Raukema, T.O.S.J. Bosman, I.G.J. Classen, T.A. Wijkamp, A. Perek, G.L. Derks, J.T.W. Koenders, L. Martinelli, R.J.E. Jaspers, TCV team, *Demonstration of a sparse sensor placement technique to the limited diagnostic set in a fusion power plant*, Fusion Eng. Des. 201 (2024) 114271
12. M.J. Pueschel, S. Coda, A. Balestri, A. Ball, R.J.J. Mackenbach, J.M. Duff, G. Snoep, TCV team, *Reducing transport via extreme flux-surface triangularity*, Nucl. Fusion 64 (2024) 056032
13. O. Kudlacek, P. David, I. Gomez, A. Gräter, B. Sieglin, W. Treutterer, M. Weiland, T. Zehetbauer, M. van Berkel, T.O.S.J. Bosman, et al., *Overview of advances in ASDEX Upgrade plasma control to support critical physics research for ITER and beyond*, Nucl. Fusion 64 (2024) 056012
14. K. Li, B. Du, Y. Li, D. Wang, H. Liu, H. Zhou, G. Luo, J. Yao, T.W. Morgan, W. Liu, W.Q. Chen, *Blistering and retention behavior of laser powder bed fused tungsten alloys under hydrogen plasma irradiation*, J. Nucl. Mater. 595 (2024) 155049
15. G.L. Derks, B. Kool, C. Vincent, S. Elmore, S. Henderson, J.T.W. Koenders, J. Lovell, G. McArdle, B. Parry, R. Scannell, R. Sarwar, K. Verhaegh, M. van Berkel, EUROfusion Tokamak Exploitation Team, MAST-U Team, *Development of real-time density feedback control on MAST-U in L-mode*, Fusion Eng. Des. 202 (2024) 114387
16. K. Verhaegh, J.R. Harrison, B. Lipschultz, N. Lonigro, S.P. Kobussen, D. Moulton, N. Osborne, T. Wijkamp, G. Derks, B. Kool, et al., *Investigations of atomic and molecular processes of NBI-heated discharges in the MAST Upgrade Super-X divertor with implications for reactors*, Nucl. Fusion 64 (2024) 086050

17. T.F. Beernaert, M.R. de Baar, L.F.P. Etman, I.G.J. Classen, M. De Bock, *Managing the complexity of plasma physics in control systems engineering*, Fusion Eng. Des. 203 (2024) 114436
18. E.H. Joffrin, et al., EUROfusion Tokamak Exploitation Team, M.J. Pueschel, M. van Berkel, S. Wiesen, J. Citrin, T.O.S.J. Bosman, L. Ceelen, G. Derks, M. Hamed, A. Ho, B. Kool, J.T.W. Koenders, A. Perek, T. Wijkamp, et al., *Overview of the EUROfusion Tokamak Exploitation programme in support of ITER and DEMO*, Nucl. Fusion 64 (2024) 112019
19. A.Kit, A.E. Jarvinen, Y.R.J. Poels, S. Wiesen, V. Menkovski, R. Fischer, M. Dunne, ASDEX Upgrade team, *On learning latent dynamics of the AUG plasma state*, Phys. Plasmas 31 (2024) 032504
20. A.E. Jarvinen, A. Kit, Y.R.J. Poels, S. Wiesen, V. Menkovski, L. Frassinetti, M. Dunne, ASDEX Upgrade team, JET Contributors, *Representation learning algorithms for inferring machine independent latent features in pedestals in JET and AUG*, Phys. Plasmas 31 (2024) 032508
21. S. Rode, S. Brezinsek, A. Kirschner, L. Moser, R. Pitts, J. Romazanov, A. Terra, S. Wiesen, T. Wauters, *Multi-staged ERO2.0 simulation of material erosion and deposition in recessed ITER mirror assemblies*, Nucl. Mater. Energy 38 (2024) 101564
22. D. Boeyeart, S. Carli, W. Dekeyser, S. Wiesen, M. Baelmans, *Numerical implications of including drifts in SOLPS-ITER simulations of EAST*, Phys. Plasmas 31 (2024) 023905
23. M.J. Gerard, M.J. Pueschel, B. Geiger, R.J.J. Mackenbach, J.M. Duff, B.J. Faber, C.C. Hegna, P.W. Terry, *On the effect of flux-surface shaping on trapped-electron modes in helically symmetric stellarators*, Phys. Plasmas 31 (2024) 052501
24. M.C.L. Morren, J.H.E. Proll, J. van Dijk, M.J. Pueschel, *Influence of collisions on trapped-electron modes in tokamaks and low-shear stellarators*, Phys. Plasmas 31 (2024) 052508
25. M. Morbey, J. Gonzalez, W. Arnold Bik, B. Tyburska-Pueschel, T.W. Morgan, *Deuterium retention in co-deposition with lithium in Magnum-PSI: experimental analysis and comparison with SOLPS-ITER*, Nucl. Fusion 64 (2024) 076019
26. N. Brughmans, R. Keppens, J.P. Goedbloed, *Parametric survey of non-axisymmetric accretion disk instabilities: Magnetorotational instability to super-Alfvénic rotational instability*, Astrophys. J. 968 (2024) 19
27. D. Moulton, J.R. Harrison, L. Xiang, P. Ryan, A. Kirk, K. Verhaegh, T.A. Wijkamp, F. Federici, J.G. Clark, B. Lipschultz, *Super-X and conventional divertor configurations in MAST-U ohmic L-mode; a comparison facilitated by interpretative modelling*, Nucl. Fusion 64 (2024) 076049
28. I. Borodkina, D. Borodin, D. Douai, J. Romazanov, E. Pawelec, E. de la Cal, H.A. Kumpulainen, S. Ratynskaia, L. Vignitchouk, S. Wiesen, et al., *Modelling of plasma facing component erosion, impurity migration, dust transport and melting processes at JET-ILW*, Nucl. Fusion 64 (2024) 106009
29. S. Wiesen, S. Dasbach, A. Kit, A.E. Jarvinen, A. Gillgren, A. Ho, A. Panera, Y.R.J. Poels, E. Westerhof, G.L. Derks, D. Reiser, M. Brenzke, V. Menkovski, P. Strand, *Data-driven models in fusion exhaust: AI methods and perspectives*, Nucl. Fusion 64 (2024) 086046
30. S. Maeyama, T. Tokuzawa, N.T. Howard, J. Citrin, T. Watanabe, *Overview of multiscale turbulence studies covering ion-to-electron scales in magnetically confined fusion plasma*, Nucl. Fusion 64 (2024) 112007
31. T.F. Beernaert, A. Verlaan, M. De Bock, L. Moser, L.F.P. Etman, I.G.J. Classen, M.R. de Baar, *Multi-level architecture modelling and analysis: The case for model-based systems engineering of fusion diagnostics*, Fusion Eng. Des. 205 (2024) 114571
32. M. Lennholm, S. Aleiferis, S. Bakes, O. Bardsley, M. van Berkel, F.J. Casson, F. Chaudry, N. Conway, T.C. Hender, B. Kool, S. Henderson, A. Hudoba, M. Lafferty, H. Meyer, J. Mitchell, A. Mitra, R. Osawa, R. Otin, A. Parrot, T. Thompson, G. Xia, *Plasma control for the STEP prototype power plant*, Nucl. Fusion 64 (2024) 096036
33. A.Panera Alvarez, A. Ho, A. Järvinen, S. Saarelma, S. Wiesen, JET Contributors, ASDEX Upgrade team, *EuroPED-NN: uncertainty aware surrogate model*, Plasma Phys. Control. Fusion 66 (2024) 095012
34. C.J. Ajay, B. McMillan, A. Bokshi, A. Di Siena, M.J. Pueschel, J. Ruiz-Ruiz, *Gyrokinetic investigation of toroidal Alfvén eigenmode (TAE) turbulence*, AIP Adv. 14 (2024) 075120

35. M. Brchnelova, M.J. Pueschel, S. Poedts, *Density-gradient-driven drift waves in the solar corona*, Phys. Plasmas 31 (2024) 092902
36. J. Hargreaves, H.E. Tipping, S. Moore, D. Kumar, D.J. Harding, H. Dominguez-Andrade, C. Bell, P.D. Hanna, H. Dawson, T.L. Martin, *The transient thermal ageing of Eurofer 97 by mitigated plasma disruptions*, Mater. Des. 244 (2024) 113207
37. L.E. di Grazia, F. Felici, M. Mattei, A. Merle, P. Molina, C. Galperti, S. Coda, B. Duval, A. Maier, T. Ravensbergen, A. Mele, A. Perek, A. Pironti, B. Vincent, C. Wuthrich, TCV team, *Automated shot-to-shot optimization of the plasma start-up scenario in the TCV tokamak*, Nucl. Fusion 64 (2024) 096032
38. O. Grulke, C. Albert, J. Alcuson Belloso, P. Aleynikov, K. Aleynikova, A. Alonso, G. Anda, T. Andreeva, P. Mulholland, M.J. Pueschel, et al., *Overview of the first Wendelstein 7-X long pulse campaign with fully water-cooled plasma facing components*, Nucl. Fusion 64 (2024) 112002
39. M. Lennholm, S. Aleiferis, S. Bakes, O. Bardsley, M. van Berkel, F.J. Casson, F. Chaudry, N.J. Conway, T.C. Hender, B. Kool, S. Henderson, M. Lafferty, H.F. Meyer, J. Mitchell, A. Mitra, R. Osawa, R. Otin, A. Parrot, T. Thompson, G. Xia, STEP Team, *Controlling a new plasma regime*, Phil. Transact. A 382 (2024) 20230403
40. G.M. Staebler, C. Bourdelle, J. Citrin, R.E. Waltz, *Quasilinear theory and modelling of gyrokinetic turbulent transport in tokamaks*, Nucl. Fusion 64 (2024) 103001
41. D. Reiser, M. Brenzke, S. Wiesen, *Parameter identification by eigenfeature analysis: application to 2D Kuramoto-Sivashinsky surface models*, Surf. Topogr. Metrol. Prop. 12 (2024) 035029
42. K. Ida, M. Yoshinuma, M. Kobayashi, T. Kobayashi, N. Kenmochi, F. Nespoli, R.M. Magee, F. Warmer, A. Dinklage, M. van Berkel, et al., *Overview of Large Helical Device experiments of basic plasma physics for solving crucial issues in reaching burning plasma conditions*, Nucl. Fusion 64 (2024) 112009
43. J.R. Harrison, A. Aboutaleb, S. Ahmed, M. Aljunid, S.Y. Allan, H. Anand, G.L. Derks, B. Kool, T.A. Wijkamp, S. Wiesen, et al., *Overview of physics results from MAST upgrade towards core-pedestal-exhaust integration*, Nucl. Fusion 64 (2024) 112017
44. C.T. Holcomb, DIII-D Team, J. Abbate, M. van Berkel, L. Ceelen, Y. de Jong, J.T.W. Koenders, J. Slief, G. Snoep, R.J.R. van Kampen, et al., *DIII-D research to provide solutions for ITER and fusion energy*, Nucl. Fusion 64 (2024) 112003
45. S. Kajita, D. Nishijima, K. Fujii, H. Tanaka, J. Vernimmen, H. van der Meiden, I. Classen, N. Ohno, *Machine learning aided line intensity ratio method for helium-hydrogen mixed recombining plasmas*, Plasma Phys. Control. Fusion 66 (2024) 105005
46. J. Decker, M. Hoppe, U. Sheikh, B.P. Duval, G. Papp, L. Simons, T.A. Wijkamp, J.A. Cazabonne, S. Coda, E. Devlaminck, et al., *Expulsion of runaway electrons using ECRH in the TCV tokamak*, Nucl. Fusion 64 (2024) 106027
47. F. Romano, V.F.B. Tanke, J. Schwartz, S. Brons, R. Goldston, T.W. Morgan, *Lithium vapour-box divertor module design for investigating vapour shielding performance and lithium transport in linear plasma generator Magnum-PSI*, Fusion Eng. Des. 208 (2024) 114659
48. M. Hoelzl, G.T. A. Huijsmans, F.J. Artola, E. Nardon, M. Bécoulet, N. Schwartz, A. Cathey, S.J.P. Pamela, K. Aleynikova, I. Krebs, et al., *Non-linear MHD modelling of transients in tokamaks: a review of recent advances with the JOREK code*, Nucl. Fusion 64 (2024) 112016
49. C. Galperti, F. Felici, T. Vu, O. Sauter, F. Carpanese, M. Kong, G. Marceca, A. Merle, J.T.W. Koenders, B. Kool, et al., *Overview of the TCV digital real-time plasma control system and its applications*, Fusion Eng. Des. 208 (2024) 114640
50. C.F. Maggi, D. Abate, M. van Berkel, T.O.S.J. Bosman, L. Ceelen, G.L. Derks, M. Hamed, J.T.W. Koenders, B. Kool, J. Citrin, et al., *Overview of T and D-T results in JET with ITER-like wall*, Nucl. Fusion 64 (2024) 112012
51. F. Federici, B. Lipschultz, G.R.A. Akkermans, K. Verhaegh, M.L. Reinke, I.G.J. Classen, Magnum-PSI team, *Effect of detachment on Magnum-PSI ELM-like pulses: Direct observations and qualitative results*, Nucl. Fusion 64 (2024) 126068

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53. S. Henderson, M. Bernert, D. Brida, G.L. Derks, S. Elmore, F. Federici, J.R. Harrison, B. Kool, T. van den Doel, T. Wijkamp, A. Kirk, N. Lonigro, J. Lovell, D. Moulton, H. Reimerdes, P. Ryan, J.M. Stobbs, K.H.A. Verhaegh, O. Bardsley, MAST-U Team, EUROfusion Tokamak Exploitation Team, *Validating reduced models for detachment onset and reattachment times on MAST-U*, Nucl. Mater. Energy 41 (2024) 101765
54. B.P. Duval, A. Abdolmaleki, M. van Berkel, T.O.S.J. Bosman, G.L. Derks, M. Hamed, J.T.W. Koenders, A. Perek, M.J. Pueschel, T.A. Wijkamp, et al., *Experimental research on the TCV tokamak*, Nucl. Fusion 64 (2024) 112023
55. A.Bertagnoli, C.H. Luce, R.J.R. van Kampen, U. Schneidewind, M. van Berkel, A. Tranmer, G. Vandersteen, S. Krause, D. Toninai, *FLOW: A framework and GUI to quantify effective thermal diffusivity and advection in permeable materials from temperature time series*, Water Resources Research 60 (2024) e2021WR037370
56. S.S. Herashchenko, V. Makhlai, I.E. Garkusha, Y.V. Petrov, N.N. Aksenov, N.V. Kulik, D.V. Yelisyeyev, P.B. Shevchuk, Y.Y. Volkova, T.W. Morgan, Y.V. Siromolot, S.I. Lebedev, T.M. Merenkova, *Experimental studies of plasma-surface interactions during inclined QSPA plasma impacts on Sn-filled CPS*, Probl. At. Sci. Technol. 154 (2024) 82-86
57. C.D. Stephens, J. Citrin, K.L. van de Plassche, C. Bourdelle, T. Tala, A. Salmi, F. Jenko, *Quasilinear modelling of collisional trapped electron modes*, J. Plasma Phys. 90 (2024) 905900618
58. M. Yoshikawa, J. Kohagura, N. Ezumi, T. Kariya, R. Minami, T. Numakura, M. Hirata, S. Togo, M. Sakamoto, H.J. van der Meiden, et al., *Behavior of detached simulation plasma by suddenly changed particle flux in GAMMA 10/PDX*, AIP Adv. 14 (2024) 125324

Publications in other journals and conference proceedings: 7

1. L. Ceelen, M. van Berkel, *Development of a model predictive control strategy for future energy producing tokamaks*, Book of Abstracts 43rd Benelux Meeting on Systems and Control (2024) 44
2. J.T.W. Koenders, A. Perek, L. Ceelen, M. van Berkel, *A multi-rate unknown input observer for exhaust control in tokamaks*, Book of Abstracts 43rd Benelux Meeting on Systems and Control (2024) 166
3. G.L. Derks, B. Kool, J.T.W. Koenders, M. van Berkel, *Density feedback control on the MAST-U tokamak in L-mode*, Book of Abstracts 43rd Benelux Meeting on Systems and Control (2024) 241
4. L. Ceelen, J.H. Jenneskens, T.O.S.J. Bosman, M.R. de Baar, M. van Berkel, *Control of Fusion Plasma Density Using Frozen Fuel Pellets*, Book of Abstracts 43rd Benelux Meeting on Systems and Control (2024) 242
5. B. Kool, G.L. Derks, T.A. Wijkamp, N. Lonigro, R. Doyle, K.H.A. Verhaegh, G.J. McArdle, C. Vincent, J. Lovell, M. van Berkel, et al., *System identification of exhaust dynamics in the MAST-U fusion experiment*, Book of Abstracts 43rd Benelux Meeting on Systems and Control (2024) 264
6. T.O.S.J. Bosman, L. Ceelen, M. van Berkel, *Predictive disturbance rejection for exhaust control in fusion reactors*, Book of Abstracts 43rd Benelux Meeting on Systems and Control (2024) 40
7. J. Slief, M. van Berkel, *Structural Thermal Optical Performance (STOP) analysis method for optical components of megawatt electron cyclotron heating systems*, Book of Abstracts SIG Meeting Thermal Issues (2024) 241166

Professional publications: 1

1. A.J.H. Donné, *Fusionsforschung - ein Internationales Unternehmen*, Techn. Bayern 5 (2024) 18-19 OA

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1. OECD Global Science Forum on Research Infrastructure Ecosystems 2024, 2024/02/28, Online, Paris, France, A.J.H. Donné, *EUROfusion*
2. 17th online Kudowa Summer School "Towards Fusion Energy", 2024/06/03-2024/06/07, Kudowa Zdroj, Poland, A.J.H. Donné, *Progress in European Fusion Research*
3. 15th Carolus Magnus Summer School on Plasma and Fusion Energy Physics, 2024/06/24-2024/07/05, Brussels, Belgium, A.J.H. Donné, *EUROfusion*, Oral DEMOL56
4. 15th Carolus Magnus Summer School on Plasma and Fusion Energy Physics, 2024/06/24-2024/07/05, Brussels, Belgium, M.R. de Baar, *Flying a tokamak*, Oral DIF4
5. 15th Carolus Magnus Summer School on Plasma and Fusion Energy Physics, 2024/06/24-2024/07/05, Brussels, Belgium, M. van Berkel, *Data-driven analysis using perturbative experiments*, Oral L43
6. 15th Carolus Magnus Summer School on Plasma and Fusion Energy Physics, 2024/06/24-2024/07/05, Brussels, Belgium, S. Wiesen, *Impurity transport and radiation*, Oral L47
7. 26th International Conference on Plasma Surface Interaction in Controlled Fusion Devices 2024 (PSI-26), 2024/05/12-2024/05/17, Marseille, France, T.W. Morgan, M. Balden, J.G.A. Scholte, M.J.H. Cornelissen, S. Roccella, J.H. You, *Tungsten monoblock performance under slow transient loading conditions in Magnum-PSI*, Oral 16May 9:30
8. 50th EPS Conference on Plasma Physics, 2024/07/08-2024/07/12, Salamanca, Spain, C. Bourdelle, C. Angioni, N. Bonanomi, Y. Camenen, F.J. Casson, J. Citrin, E. Fable, M. Fajardo, A. Ho, S. Wiesen, T. Luda, P. Maget, P. Manas, M. Marin, TSVV11 team, *Integrated modeling of tokamak plasmas: Progresses and challenges towards ITER operation and reactor design*, Oral I.509
9. 66th Annual Meeting of the APS Division of Plasma Physics, 2024/10/07-2024/10/11, Atlanta, GA, USA, M.J. Pueschel, *Understanding saturation and turbulence: the impact of stable modes*, Oral CT03.00001
10. 66th Annual Meeting of the APS Division of Plasma Physics, 2024/10/07-2024/10/11, Atlanta, GA, USA, M.R. de Baar, T.F. Beernaert, D. Krishnamoorthy, H. Varadarajan, P. Etman, *Taking it to the next level: Managing complexity in the fusion plasma control system*, Oral BM11.00009
11. Bavarian State Government Expert Committee on Fusion, 2024/06/07, Munchen, Germany, A.J.H. Donné, *Fusionsforschung - ein Internationales Unternehmen*
12. EUROfusion WPENR Enabeling Research, Final Project Presentation, 2024/10/23, Garching, Germany, M. van Berkel, *Multivariable feedback control of radiative loss-processes using multi-spectral imaging*

Invited seminars: 4

1. General Fusion (MTF fusion device company), 2024/03/06, Vancouver, Canada, A.J.H. Donné, *The European roadmap towards fusion electricity*
2. Seminar Slovak University of Technology, 2024/05/17, Bratislava, Slovakia, A.J.H. Donné, *Nuclear fusion: from science fiction to science fact*
3. STEP fuel cycle seminar, 2024/03/19, Culham, UK, B. Kool, M. van Berkel, E. Westerhof, M.R. de Baar, *Detachment control for STEP (Spherical Tokamak for Energy Production)*
4. Seminar at ARCNL Advanced Research Center for Nanolithography, 2024/10/30, Amsterdam, Netherlands, M.R. de Baar, *A systems approach to plasma control*

Other oral and poster presentations at (international) conferences & meetings: 79

1. Physics Veldhoven 2024, 2024/01/23-2024/01/24, Veldhoven, Netherlands, F. Romano, V. Tanke, J. Gonzalez Munoz, J. Schwartz, S. Brons, R. Goldston, L. Romers, P. de Laat, T.W. Morgan, *Studying the physics of the lithium vapour box in the linear plasma generator Magnum-PSI*, Oral Parallel sessions K
2. DPG – Frühjahrstagung, 2024/02/26-2024/02/29, Greifswald, Deutschland, A. Tsikouras, F. Reimold, G. Partezotti, M. van Berkel, J.T.W. Koenders, V. Winters, V. Perseo, D.H. Zhang, M.R. de Baar, W7-X Team, *Development of real-time control scheme for power exhaust via impurity seeding in Wendelstein 7-X*, Poster P 25.11
3. FYSICA 2024 (NNV) Physics at the Human Scale, 2024/04/12, Eindhoven, Netherlands, T.W. Morgan, *The future of fusion - putting the sun in a box*, Oral (Focus session Renewable Energy Research Eindhoven)
4. euspen Special Interest Group Meeting: Thermal Issues (European Society for Precision Engineering and Nanotechnology), 2024/03/13-2024/03/14, Eindhoven, Netherlands, J.T. Veenendaal, J. Slief, M. van Berkel, C. Verhoosel, *Structural Thermal Optical Performance (STOP) analysis method for optical components of megawatt electron cyclotron heating systems*, Oral
5. 22nd Joint Workshop on Electron Cyclotron Emission (ECE) and Electron Cyclotron Resonance Heating (ECRH) (EC-22-2024), 2024/04/22-2024/04/26, Daejeon, South Korea, J.T. Veenendaal, J.H. Slief, M. Preynas, A. Das, C. Verhoosel, S. Weiland, E. Westerhof, M. van Berkel, *Structural Thermal Optical Performance (STOP) analysis method for optical components of megawatt electron cyclotron heating systems*, Poster
6. 43rd Benelux Meeting on Systems and Control 2024, 2024/03/26-2024/03/28, Blankenberge, Belgium, J.T.W. Koenders, A. Perek, L. Ceelen, M. van Berkel, *A multi-rate unknown input observer for particle and exhaust control in the tokamak TCV*, Oral We-5.2-3
7. 43rd Benelux Meeting on Systems and Control 2024, 2024/03/26-2024/03/28, Blankenberge, Belgium, G.L. Derks, B. Kool, J.T.W. Koenders, M. van Berkel, *Density feedback control on the MAST-U tokamak in L-mode*, Oral Th-7.7-1
8. 43rd Benelux Meeting on Systems and Control 2024, 2024/03/26-2024/03/28, Blankenberge, Belgium, L. Ceelen, J. Jenneskens, T.O.S.J. Bosman, M.R. de Baar, M. van Berkel, *Control of fusion plasma density using frozen fuel pellets*, Oral Th-7.7-2
9. 43rd Benelux Meeting on Systems and Control 2024, 2024/03/26-2024/03/28, Blankenberge, Belgium, B. Kool, G.L. Derks, T.A. Wijkamp, N. Lonigro, R. Doyle, K.H.A. Verhaegh, G. McArdle, C. Vincent, J. Lovell, M. van Berkel, D. Brida, S. Henderson, H. Reimerdes, M. Bernert, EUROfusion Tokamak Exploitation Team, MAST-U Team, *System identification of exhaust dynamics in the MAST-U fusion experiment*, Oral Th-8.7-2
10. 43rd Benelux Meeting on Systems and Control 2024, 2024/03/26-2024/03/28, Blankenberge, Belgium, T.O.S.J. Bosman, L. Ceelen, M. van Berkel, *Predictive disturbance rejection for exhaust control in fusion reactors*, Oral Tu-1.4-1
11. 43rd Benelux Meeting on Systems and Control 2024, 2024/03/26-2024/03/28, Blankenberge, Belgium, J.T. Veenendaal, M. van Berkel, *Development of a model predictive control strategy for future energy producing tokamaks*, Oral Tu-1.4-5
12. 15th Carolus Magnus Summer School on Plasma and Fusion Energy Physics, 2024/06/24-2024/07/05, Brussels, Belgium, H.J. de Blank, *MHD instabilities*, Oral L10
13. 15th Carolus Magnus Summer School on Plasma and Fusion Energy Physics, 2024/06/24-2024/07/05, Brussels, Belgium, H.J. de Blank, *Particle orbits in the magnetic field*, Oral L05
14. 15th Carolus Magnus Summer School on Plasma and Fusion Energy Physics, 2024/06/24-2024/07/05, Brussels, Belgium, H.J. de Blank, *Gyrokinetic and drift-kinetic models*, Oral L06
15. 15th Carolus Magnus Summer School on Plasma and Fusion Energy Physics, 2024/06/24-2024/07/05, Brussels, Belgium, H.J. de Blank, *Plasma equilibrium*, Oral L08

16. 15th Carolus Magnus Summer School on Plasma and Fusion Energy Physics, Brussels, Belgium, 2024/06/24-2024/07/05, H. van Eck, *Overview of fusion experiments at DIFFER*, Oral DIF1
17. 15th Carolus Magnus Summer School on Plasma and Fusion Energy Physics, Brussels, Belgium, 2024/06/24-2024/07/05, M.J. Pueschel, *Drift-wave instabilities in fusion plasmas*, Oral DIF2
18. 15th Carolus Magnus Summer School on Plasma and Fusion Energy Physics, Brussels, Belgium, 2024/06/24-2024/07/05, M.J. Pueschel, *Saturation, turbulence and transport*, Oral DIF3
19. 15th Carolus Magnus Summer School on Plasma and Fusion Energy Physics, Brussels, Belgium, 2024/06/24-2024/07/05, T.W. Morgan, *Laboratory experiments to study PMI*, Oral DIF5
20. 26th International Conference on Plasma Surface Interaction in Controlled Fusion Devices 2024 (PSI-26), 2024/05/12-2024/05/17, Marseille, France, T.O.S.J. Bosman, J.T.W. Koenders, L. Ceelen, M. van Berkel, *Systematic design of controllers for the X-point radiator using system identification in AUG, JET D and D-T operation*, Oral 17May 8:40
21. 26th International Conference on Plasma Surface Interaction in Controlled Fusion Devices 2024 (PSI-26), 2024/05/12-2024/05/17, Marseille, France, F. Romano, V.F.B. Tanke, J. Gonzalez, J. Schwartz, S. Brons, R. Goldston, L. Romers, P. de Laat, T.W. Morgan, *Lithium vapour box module for liquid metal experimental campaigns in the linear plasma generator Magnum-PSI*, Poster P1-098
22. 26th International Conference on Plasma Surface Interaction in Controlled Fusion Devices 2024 (PSI-26), 2024/05/12-2024/05/17, Marseille, France, H. Tanaka, Y. Hayashi, S. Kajita, D. Hwangbo, J.W.M. Vernimmen, J.G.A. Scholte, H.J. van der Meiden, I.G.J. Classen, T.W. Morgan, N. Ohno, *Detached plasma fluctuation and radial transport behavior at high/low magnetic field in Magnum-PSI*, Poster P1-003
23. 26th International Conference on Plasma Surface Interaction in Controlled Fusion Devices 2024 (PSI-26), 2024/05/12-2024/05/17, Marseille, France, M. Morbey, F. Effenberg, S. Abe, T. Abrams, A. Bortolon, R. Maingi, R.T. Hood, U. Losada, A. Nagy, T.W. Morgan, J. Ren, D.L. Rudakov, M. Simmonds, D. Truong, *D retention in Li-D co-deposits and outgassing: experiments on Magnum-PSI and DIII-D*, Oral 15May 9:40
24. 26th International Conference on Plasma Surface Interaction in Controlled Fusion Devices 2024 (PSI-26), 2024/05/12-2024/05/17, Marseille, France, M. Morbey, F. Effenberg, S. Abe, T. Abrams, A. Bortolon, R. Maingi, R.T. Hood, U. Losada, A. Nagy, T.W. Morgan, J. Ren, D.L. Rudakov, M. Simmonds, D. Truong, *D retention in Li-D co-deposits and outgassing: experiments on Magnum-PSI and DIII-D*, Poster P3-112
25. 26th International Conference on Plasma Surface Interaction in Controlled Fusion Devices 2024 (PSI-26), 2024/05/12-2024/05/17, Marseille, France, T.O.S.J. Bosman, J.T.W. Koenders, L. Ceelen, M. van Berkel, *Systematic design of controllers for the X-point radiator using system identification in AUG, JET D and D-T operation*, Poster P4-087
26. 26th International Conference on Plasma Surface Interaction in Controlled Fusion Devices 2024 (PSI-26), 2024/05/12-2024/05/17, Marseille, France, K. Schutjes, I.G.J. Classen, J.W.M. Vernimmen, K.J. Loring, H.J. van der Meiden, Magnum-PSI team, *Design of CARS diagnostic for measuring rovibrational populations of hydrogen in divertor-relevant plasmas*, Poster P4-024
27. 26th International Conference on Plasma Surface Interaction in Controlled Fusion Devices 2024 (PSI-26), 2024/05/12-2024/05/17, Marseille, France, T.W. Morgan, M. Balden, J.G.A. Scholte, M.J.H. Cornelissen, S. Roccella, J.H. You, *Tungsten monoblock performance under slow transient loading conditions in Magnum-PSI*, Poster P3-120
28. 26th International Conference on Plasma Surface Interaction in Controlled Fusion Devices 2024 (PSI-26), 2024/05/12-2024/05/17, Marseille, France, J.T.W. Koenders, M. van Berkel, *Towards real-time control of radiative loss-processes in the divertor using machine-learning accelerated multi-spectral image processing*, Poster P2-111
29. 26th International Conference on Plasma Surface Interaction in Controlled Fusion Devices 2024 (PSI-26), 2024/05/12-2024/05/17, Marseille, France, S. Wiesen, *Exhaust assessment of a European Volumetric Neutron Source (EU-VNS) using SOLPS-ITER*, Poster P2-050

30. 26th International Conference on Plasma Surface Interaction in Controlled Fusion Devices 2024 (PSI-26), 2024/05/12-2024/05/17, Marseille, France, M.J.H. Cornelissen, B. Tyburska-Pueschel, J.D.E. Verstappen, I.G.J. Classen, J.W.M. Vernimmen, S. Brons, M. Rasinski, E. Zoethout, D. Dorow-Gerspach, S. Brezinsek, J. Beckers, T.W. Morgan, *The impact of entrainment on the erosion and re-deposition of tungsten under ITER-like plasma conditions*, Poster P1-038
31. Joint ICTP-IAEA School on Data for Modelling Atomic and Molecular Processes in Plasmas, 2024/03/18-2024/03/22, Griagnano, Italy, K. Schutjes, I.G.J. Classen, J.W.M. Vernimmen, K.J. Loring, H.J. van der Meiden, Magnum-PSI team, *Design of TALIF and CARS diagnostics for measuring atomic and molecular Hydrogen densities in divertor-relevant plasmas*, Poster P30
32. 50th EPS Conference on Plasma Physics, 2024/07/08-2024/07/12, Salamanca, Spain, M. van Berkel, M. Baruzzo, M. Bernert, D. Brida, T.O.S.J. Bosman, L. Ceelen, G.L. Derks, J.T.W. Koenders, B. Kool, S. Wiesen, et al., *Exhaust control characterization at the large and midsize tokamaks of Europe*, Poster
33. 50th EPS Conference on Plasma Physics, 2024/07/08-2024/07/12, Salamanca, Spain, B. Kool, G.L. Derks, T.A. Wijkamp, N. Lonigro, R. Doyle, K. Verhaegh, G. McArdle, C. Vincent, J. Lovell, M. van Berkel, et al., *First demonstration of real-time exhaust control in long-legged, strongly baffled, alternative divertors configurations*, Oral O.427
34. 50th EPS Conference on Plasma Physics, 2024/07/08-2024/07/12, Salamanca, Spain, M. Hoppe, I. Ekmark, P. Halldestam, O. Vallhagen, L. Votta, J. Decker, G. Papp, I. Pusztai, R.A. Tinguely, T. Wijkamp, T. Fülöp, *Runaway-electron model development and validation in tokamaks*, Oral O.905
35. 21st International Congress on Plasma Physics ICPP 2024, 2024/09/08-2024/09/13, Ghent, Belgium, H.A. Kumpulainen, D. Reiter, S. Brezinsek, M. Groth, J. Romazanov, S. Wiesen, *Impact of co-dependent energy and angular atomic impact spectra on Tungsten erosion in JET*, Oral Talk 262091
36. 66th Annual Meeting of the APS Division of Plasma Physics, 2024/10/07-2024/10/11, Atlanta, GA, USA, N. Lonigro, R. Doyle, K.H.A. Verhaegh, J.S. Allcock, C. Bowman, J.R. Harrison, B. Lipschultz, P. Ryan, S. Silburn, T. Wijkamp, et al., *Novel imaging techniques enable 2D physics exploration of the MAST-U Super-X divertor*, Oral BO05.00007
37. 66th Annual Meeting of the APS Division of Plasma Physics, 2024/10/07-2024/10/11, Atlanta, GA, USA, M.R. de Baar, T.F. Beernaert, D. Krishnamoorthy, H. Varadarajan, P. Etman, *Taking it to the next level: Managing complexity in the fusion plasma control system*, Oral BM11.00009
38. 66th Annual Meeting of the APS Division of Plasma Physics, 2024/10/07-2024/10/11, Atlanta, GA, USA, S. Wiesen, S. Dasbach, A. Kit, A.E. Jarvinen, A. Gillgren, A. Ho, A. Panera, D. Reiser, E. Westerhof, G.L. Derks, M. Brenzke, Y.R.J. Poels, V. Menkovski, P. Strand, *Towards validated higher-fidelity AI models in fusion exhaust*, Oral CM11.00006
39. 66th Annual Meeting of the APS Division of Plasma Physics, 2024/10/07-2024/10/11, Atlanta, GA, USA, K. Loring, E.A.L. Visser, C.J.D. Robben, K. Schutjes, J.W.M. Vernimmen, H.J. van der Meiden, I.G.J. Classen, S.H. Glenzer, *Spatially-resolved TALIF measurements of atomic hydrogen density, temperature, and velocity in the Upgraded Pilot-PSI linear device*, Poster PO05.00001
40. 66th Annual Meeting of the APS Division of Plasma Physics, 2024/10/07-2024/10/11, Atlanta, GA, USA, A. Ho, L. Zanisi, A. Kirsch, B. de Leeuw, N. Howard, P. Rodriguez-Fernandez, *Active learning of turbulent transport predictions towards robust generalized surrogate models*, Poster PP12.00024
41. 66th Annual Meeting of the APS Division of Plasma Physics, 2024/10/07-2024/10/11, Atlanta, GA, USA, D.L. Rudakov, E.M. Hollmann, T. Abrams, I. Bykov, G. Sinclair, S. Zamperini, S. Abe, F. Effenberg, J.D. Coburn, M. Morbey, et al., *Recent DiMES PMI research in the DIII-D tokamak*, Poster PO06.00001
42. 66th Annual Meeting of the APS Division of Plasma Physics, 2024/10/07-2024/10/11, Atlanta, GA, USA, J.D. Coburn, F. Effenberg, M.A. Cusentino, C.C. Hargrove, M. Ialovega, M. Morbey, L. Nuckols, Z. Popovic, S. Zamperini, T. Abrams, D.L. Rudakov, *Advancing plasma-facing materials for fusion pilot plants at DIII-D*, Poster UP12.00068

43. 66th Annual Meeting of the APS Division of Plasma Physics, 2024/10/07-2024/10/11, Atlanta, GA, USA, M.J. Pueschel, P. Mulholland, M.C.L. Morren, T. Jitsuk, K.C.F. Koolen, M.M. Skyllas, A.F. Claasen, J.H.E. Proll, *Turbulence in stellarators and tokamaks - Progress in the Dutch fusion program*, Poster TP12.00034
44. 66th Annual Meeting of the APS Division of Plasma Physics, 2024/10/07-2024/10/11, Atlanta, GA, USA, S. Wiesen, C. Bachmann, M. Siccinio, J. Boscary, C. Bourdelle, M. Coleman, G. Federici, F. Maviglia, R. Neu, EUROfusion DEMO Central Team, *Exhaust operational space for the European Volumetric Neutron Source (EU-VNS)*, Poster PO05.00012
45. 66th Annual Meeting of the APS Division of Plasma Physics, 2024/10/07-2024/10/11, Atlanta, GA, USA, C. Olde, A.R. Field, D.B. King, F.J. Casson, C.D. Challis, J. Hobirk, A. Kappatou, D. Keeling, E. Lerche, S. Wiesen, et al., *Impurity screening in hybrid scenario plasmas in JET-ILW*, Poster PO06.00002
46. 26th International Conference on Plasma Surface Interaction in Controlled Fusion Devices 2024 (PSI-26), 2024/05/12-2024/05/17, Marseille, France, M. Bernert, T.O.S.J. Bosman, J.T.W. Koenders, L. Ceelen, *X-point radiation: from discovery to potential application in a future reactor*, Oral 17May 8:00
47. 26th International Conference on Plasma Surface Interaction in Controlled Fusion Devices 2024 (PSI-26), 2024/05/12-2024/05/17, Marseille, France, C.A. Orrico, M. van Berkel, T.O.S.J. Bosman, L. Ceelen, D. Krishnamoorthy, *Model predictive density profile control with discrete fuel pellets in integrated simulation (JINTRAC)*, Poster P3-002
48. 26th International Conference on Plasma Surface Interaction in Controlled Fusion Devices 2024 (PSI-26), 2024/05/12-2024/05/17, Marseille, France, M. Bernert, T.O.S.J. Bosman, J.T.W. Koenders, L. Ceelen, *X-point radiation: from discovery to potential application in a future reactor*, Poster P4-086
49. 26th International Conference on Plasma Surface Interaction in Controlled Fusion Devices 2024 (PSI-26), 2024/05/12-2024/05/17, Marseille, France, I.G.J. Classen, J.W.M. Vernimmen, H.J. van der Meiden, *Active spectroscopy on Magnum-PSI to characterize neutral particles in detached conditions*, Poster P3-007
50. 26th International Conference on Plasma Surface Interaction in Controlled Fusion Devices 2024 (PSI-26), 2024/05/12-2024/05/17, Marseille, France, T.A. Wijkamp, N. Lonigro, K.H.A. Verhaegh, R. Doyle, B. Lipschultz, A. Perek, I.G.J. Classen, R.J.E. Jaspers, EUROfusion Tokamak Exploitation Team, MAST Upgrade Team, *Multispectral imaging for improved inference of hydrogenic particle and power sources and sinks in the MAST-U super-X divertor*, Poster P3-013
51. MAST-U Science Meeting, 2024/05/05, Culham, UK, B. Kool, G.L. Derks, J.T.W. Koenders, M. van Berkel, *Detachment sensitivity and control update (CTRL-02)*, Oral
52. 8th International Symposium on Liquid Metals Applications for Fusion (ISLA-8) 2024, 2024/09/08-2024/09/12, Hefei, China, J.G.A. Scholte, R. Al, D. Horsely, M. Iafrati, J.W.M. Vernimmen, T.W. Morgan, *Tin droplet ejection under hydrogen plasma exposure*, Oral
53. 8th International Symposium on Liquid Metals Applications for Fusion (ISLA-8) 2024, 2024/09/08-2024/09/12, Hefei, China, V.F.B. Tanke, S. Brons, F. Romano, J. Scholten, R.H.M. Timmer, J.W.M. Vernimmen, T.W. Morgan, *The use of optical diagnostics during liquid metal vapour deposition in high heat flux linear plsma generators*, Oral
54. 8th International Symposium on Liquid Metals Applications for Fusion (ISLA-8) 2024, 2024/09/08-2024/09/12, Hefei, China, M. Morbey, C. Robben, T.W. Morgan, *Dynamics of D outgassing from Li-D co-deposits in different environments and isotope exchange*, Oral
55. 8th International Symposium on Liquid Metals Applications for Fusion (ISLA-8) 2024, 2024/09/08-2024/09/12, Hefei, China, T.W. Morgan, R.S. Al, S. Alonso van der Westen, H. Beens, S. Brons, J.A.W. van Dommelen, H.J.N. van Eck, M.G. D. Geers, H.J. van der Meiden, M. Morbey, C.A. Orrico, M.J. van de Pol, F. Romano, J.G.A. Scholte, J. Scholten, V.F.B. Tanke, R.H.M. Timmer, J.W.M. Vernimmen, E.G.P. Vos, *Progress in the development of LiMeS-lab*, Oral

56. 33rd Symposium on Fusion Technology (hybrid) SOFT 2024, 2024/09/22-2024/09/27, Dublin, Ireland, T.F. Beernaert, M.R. de Baar, I.G.J. Classen, *Model-based systems engineering for plasma control system design*, Poster P2-53
57. 33rd Symposium on Fusion Technology (hybrid) SOFT 2024, 2024/09/22-2024/09/27, Dublin, Ireland, M. Lennholm, L. Ceelen, T.O.S.J. Bosman, B. Kool, M. van Berkel, et al., *Burn relevant D-T mixture control at JET*, Oral O1C.2
58. 33rd Symposium on Fusion Technology (hybrid) SOFT 2024, 2024/09/22-2024/09/27, Dublin, Ireland, T. Pederson, H. Anand, C. Lasnier, L. Ceelen, J. Ren, K. Erickson, B. Penaflor, J. Ferron, *First demonstration of real-time divertor heat flux feedback control on DIII-D*, Poster P2-3
59. 66th Annual Meeting of the APS Division of Plasma Physics, 2024/10/07-2024/10/11, Atlanta, GA, USA, G.W. Held, C.C. Hegna, L. Singh, B.J. Faber, M.J. Pueschel, M.R. Wezeman, G.M. Weir, A. Jacobs, *Application of a synthetic diagnostic and comparison to HSX data*, Poster TP12.00038
60. 66th Annual Meeting of the APS Division of Plasma Physics, 2024/10/07-2024/10/11, Atlanta, GA, USA, M.J. Gerard, B. Geiger, M.J. Pueschel, B.J. Faber, P.W. Terry, C.C. Hegna, H.O. Miller-Hillebrecht, *On the formation of large-scale quasi-coherent structures in the Helically-Symmetric eXperiment*, Poster JP12.00003
61. 66th Annual Meeting of the APS Division of Plasma Physics, 2024/10/07-2024/10/11, Atlanta, GA, USA, J.M. Duff, B.J. Faber, C.C. Hegna, M.J. Pueschel, P.W. Terry, *Suppressing trapped-electron-mode-driven turbulence in quasisymmetric equilibria via 3D shape optimization*, Poster JP12.00061
62. 66th Annual Meeting of the APS Division of Plasma Physics, 2024/10/07-2024/10/11, Atlanta, GA, USA, B. Tripathi, A.E. Fraser, P.W. Terry, M.J. Pueschel, E.G. Zweibel, *Zonalization and induction of 3-D Kelvin–Helmholtz-Instability-Driven turbulent dynamo*, Poster JP12.00150
63. 66th Annual Meeting of the APS Division of Plasma Physics, 2024/10/07-2024/10/11, Atlanta, GA, USA, B. Tripathi, A.E. Fraser, P.W. Terry, E.G. Zweibel, M.J. Pueschel, *Turbulent dynamos driven by flow-instability-induced topology-favored zonal jets*, Oral JM11.00007
64. 66th Annual Meeting of the APS Division of Plasma Physics, 2024/10/07-2024/10/11, Atlanta, GA, USA, H.O. Miller-Hillebrecht, M.J. Gerard, I.M. Richardson, B.J. Faber, W. Goodman, X. Han, M.J. Pueschel, B. Geiger, *Experimental study of reduced TEM growth rate configurations on the HSX stellarator*, Oral CO06.00006
65. 66th Annual Meeting of the APS Division of Plasma Physics, 2024/10/07-2024/10/11, Atlanta, GA, USA, B. Tripathi, A.E. Fraser, P.W. Terry, E.G. Zweibel, M.J. Pueschel, A.J. Barker, *Principles of instability saturation: Stable perturbations in hydrodynamic, magnetized, and thermal-diffusion-destabilized shear flows*, Poster ZP12.00012
66. 66th Annual Meeting of the APS Division of Plasma Physics, 2024/10/07-2024/10/11, Atlanta, GA, USA, S.W. Tsao, M.J. Pueschel, A. Tenerani, D.R. Hatch, *Studying 3D reconnection heating in the solar corona via gyrokinetic simulation*, Poster BP12.00073
67. 66th Annual Meeting of the APS Division of Plasma Physics, 2024/10/07-2024/10/11, Atlanta, GA, USA, M. Stowe, Z.R. Williams, M.J. Pueschel, J.S. Sarff, *Gyrokinetic analysis of microinstability-driven dynamics in a Quasi-Single-Helicity environment on the Madison Symmetric Torus*, Poster CP12.00058
68. 19th International Workshop on H-mode Physics and Transport Barriers (H-Mode Workshop 2024), 2024/09/24-2024/09/27, Mito, Japan, M. Sos, C. Giroud, B. Chapman-Oplopoiou, S. Saarelma, D.B. King, L. Frassinetti, S. Wiesen, B. Labit, A. Kappatou, D. Keeling, et al., *Pedestal performance of JET Ne-seeded D and D-T discharges*, Poster P4-08
69. 14th IAEA Technical Meeting on Control Systems, Data Acquisition, Data Management and Remote Participation in Fusion Research, 2024/07/15-2024/07/18, Sao Paulo, Brazil, M. van Berkel, J.T.W. Koenders, T. Ravensbergen, A. Perek, G.L. Derks, *Why dynamic measurements are crucial for time-dependent modelling of detachment?*, Oral
70. Meeting of ITPA Topical Group SOL and Divertor Physics (DivSOL), 2024/10/21-2024/10/24, Prague, Czech Republic, T.W. Morgan, *Boron layer experiments in Magnum-PSI*, Oral 21st, 11:50

71. Meeting of ITPA Topical Group SOL and Divertor Physics (DivSOL), 2024/10/21-2024/10/24, Prague, Czech Republic, T.O.S.J. Bosman, M. Bernert, L. Ceelen, B. Sieglin, J.T.W. Koenders, T. Ravensbergen, O. Kudlacek, P. Fox, D. Brida, M. van Berkel, et al., *Comparison of detachment control from JET to AUG*, Oral 22nd, 11:10
72. Meeting of ITPA Topical Group SOL and Divertor Physics (DivSOL), 2024/10/21-2024/10/24, Prague, Czech Republic, L. Ceelen, G.L. Derks, T.O.S.J. Bosman, J.T.W. Koenders, B. Kool, M. van Berkel, *Detachment control MAST-U, resilience against T-cliff*, Oral,22nd, 10:55
73. Meeting of ITPA Topical Group SOL and Divertor Physics (DivSOL), 2024/10/21-2024/10/24, Prague, Czech Republic, J. Hargreaves, T.W. Morgan, *The low-cycle thermal fatigue cracking of plasma-facing tungsten due to strike point sweeping*, Oral 24th, 10:40
74. Meeting of ITPA Topical Group SOL and Divertor Physics (DivSOL), 2024/10/21-2024/10/24, Prague, Czech Republic, S. Wiesen, N. Vianello, *JET DTE3 detachment neon seeding*, Oral 22nd, 8:35
75. 8th IFAC Conference on Nonlinear Model Predictive Control (IFAC NMPC 2024), 2024/08/21-2024/08/24, Kyoto, Japan, C.A. Orrico, W.P.M.H. Heemels, D. Krishnamoorthy, *Learning myopic mixed-integer nonlinear model predictive control using KKT residual minimization*, Poster
76. 8th IFAC Conference on Nonlinear Model Predictive Control (IFAC NMPC 2024), 2024/08/21-2024/08/24, Kyoto, Japan, C.A. Orrico, M. van Berkel, T.O.S.J. Bosman, L. Ceelen, W.M. Klip, W.P. M. H. Heemels, D. Krishnamoorthy, *Validation of mixed-integer MPC strategies for density control in nuclear fusion tokamaks on high fidelity plasma simulations*, Poster
77. 32nd ERNSI Workshop 2024, 2024/09/29-2024/10/02, Venice, Italy, E.M.M. Kivits, P.M.J. van den Hof, *Mixed linear dynamic networks*, Oral
78. EUROfusion WPENR Enabeling Research, Technology and Systems, Project no.11 3rd year review meeting, 2024/04/07, Garching, Germany, M. van Berkel, *Multivariable feedback control of radiative loss-processes using multi-spectral imaging*, Oral
79. Meeting of the ITPA Topical Group on Diagnostics, 2024/10/03, Caderache, France, M. van Berkel, *EUROfusion JEX Diagnostics JEX DIAG-15 report on density (feedback) control with pellets*, Oral

Positions: 28

1. M.R. de Baar, Member of the Fusion for Energy (F4E) Governing Board (since 2019), 2024
2. M.R. de Baar, Leader ITPA Real-time Diagnostics Subgroup (RT-SWG) (since 2018), 2024
3. M.R. de Baar, Member of the Fusion for Energy (F4E) Technical Advisory Panel (since 2022), 2024
4. M.J. Pueschel, Member ITPA Transport and Confinement Topical Group, 2024
5. M. van Berkel, Member ITPA Integrated Operations Scenarios (IOS) Topical Group, 2024
6. M.J. Pueschel, Member FSD Project Board, part of E-TASC Scientific Board (EUROfusion - Theory and Advanced Simulation Coordination), 2024
7. S. Wiesen, Member Plasma System Division in EUROfusion DEMO Central Team, 2024
8. E. Westerhof, National representative in the Fusion Expert Group of the European Commission (2024-2025), 2024
9. M.J. Pueschel, Member U.S. National Stellarator Coordinating Committee (since 2017), 2024
10. A.J.H. Donné, Member of Bavarian State Government Expert Committee on Nuclear Fusion, Germany (since 2024), 2024
11. A.J.H. Donné, Partner of FEInn - Frontiers in Energy Innovations GmbH, Germany (fusion consultancy, since 2024), 2024
12. A.J.H. Donné, Chair Scientific and Technical Advisory Board General Fusion Inc., Canada (since 2024), 2024
13. A.J.H. Donné, Member International Advisory Board of the Institute of Solid State Physics, University of Latvia (ISSP-UL) (since 2022), 2024

14. A.J.H. Donné, Chair of the International Advisory Committee of EAST (Hefei, China) (since 2019; member since 2015), 2024
15. A.J.H. Donné, Member of the BEST Programme Advisory Committee (Hefei, China) (since 2021), 2024
16. A.J.H. Donné, Member International Scientific Committee AAPPS-DPP Conference (Association of Asia Pacific Physical Societies) (since 2017), 2024
17. M.J. Pueschel, Lecturer at Ruhr University Bochum, Germany (since 2021), 2024
18. T.W. Morgan, Member Scientific Programme Committee International Conference on Plasma-Facing Materials and Components for Fusion Applications PFMC (since 2019), 2024
19. T.W. Morgan, Member of the International Program Committee of the 8th International Symposium on Liquid Metals Applications for Fusion (ISLA-8) (Hefei, China, Sept. 8-12, 2024), 2024
20. H.J. de Blank, Member of the Organizing Committee of the Carolus Magnus Summer School on Plasma and Fusion Energy Physics (since 2014), 2024
21. M.J. Pueschel, Member NWO advisory committee Physics of Fluids and Soft Matter FSM (since 2021), 2024
22. M.R. de Baar, Professor at Eindhoven University of Technology (since 2012), 2024
23. T.W. Morgan, Associate Professor Eindhoven University of Technology (since 2019), 2024
24. M. van Berkel, University Researcher Eindhoven University of Technology (since 2020), 2024
25. M.R. de Baar, Member of the Advisory Board FONTYS Applied Natural Sciences (since 2018), 2024
26. M.J. Pueschel, Lecturer at Eindhoven University of Technology (since 2021), 2024
27. H.J. de Blank, Lecturer Course series at Eindhoven University of Technology (since 2015), 2024
28. P. Thune, Member NWO ENW Round Table Physics (Joint chair Fontys and DIFFER), 2024

Public events and industry contacts: 11

1. acatech am Dienstag: Fusionsenergie – Chancen, Herausforderungen, Zeithorizonte, 2024/01/16, Online, München, Germany, A.J.H. Donné, *Der europäische Weg zum Fusionsstrom*, Oral Podium
2. Afscheidssymposium Jeanette de Ridder (Senior coordinating advisor large scale research infrastructures), 2024/01/23, Leiden, Netherlands, M.R. de Baar, *Big science and valorisation*
3. Utrechtse Natuurkundig Gezelschap, 2024/05/07, Utrecht, The Netherlands, A.J.H. Donné, *Fusion research: Status, challenges and prospects*
4. Vereniging voor Weer- en Sterrenkunde Thales, 2024/05/16, Zwolle, Netherlands, M.R. de Baar, *Nuclear Fusion. The good, the bad and the ugly*
5. Symposium The Future of Fusion. Valedictory professor Niek Lopes Cardozo, 2024/05/23, Eindhoven, Netherlands, M.R. de Baar, *The taming of the shrew*
6. Datalinqs Climate Program DCP voor Rotterdamse Haven Industrieel Complex Bijeenkomst DIFFER en TU Delft – Kernenergie, 2024/05/28, Rotterdam, Netherlands, M.R. de Baar, *Nuclear Fusion. The good, the bad and the ugly*
7. 3e De Nacht van de Ruimte 2024. Over de zon, de bron van ons leven, 2024/06/20, Nijmegen, Netherlands, M.R. de Baar, *A star on Earth*
8. European Fusion Teacher Day 2024, Dutch local program: Fusie onderzoek in Nederland. Gezamelijke presentatie door DIFFER en Technische Universiteit Eindhoven, 2024/10/11, Eindhoven, Netherlands, D. van Walderveen, *Kernfusie-onderzoek bij DIFFER in 10 minuten*
9. 1st Spanish-Dutch Scientific Congress 2024. Wetenschap als brug - La Ciencia como Puente, 2024/11/19, Amsterdam, Netherlands, M.R. de Baar, *Participant Roundtable Session I: Science as a bridge: collaboration networks*
10. Visit NWO on location NWO-I Institute DIFFER, 2024/04/18, Eindhoven, Netherlands, M. van Berkel, *Regelen van de uitlaat en kern van kernfusiereactoren*

11. 3rd Belgium Fusion Day, 2024/10/18, Brussels, Belgium, M. van Berkel, *Panel discussions 1: Challenges ahead: input on 'Camera's looking into the divertor of a tokamak'*

Awards: 2

1. C. Orrico, *IEEE CSL Outstanding Student Paper Prize (OSPP)*, at 63th IEEE CDC, Milan, Italy, 16-19 December 2024, 2024/12/19
2. A.J.H. Donné, *Chinese Government Friendship Award for important contributions to China's socialist modernisation as well as exchanges and cooperation with other countries*, 2024/10/02

Media appearances: 27

1. Het gestage karwei om de belofte van kernfusie waar te maken, Trouw, 2024/01/05, Interview with T. Donné
2. De race om de ontwikkeling van kernfusie is in volle gang: 'De lont zit nu in het kruitvat', AD, 2024/01/04, Interview with M. de Baar
3. Nuclear fusion breakthrough: European scientists achieve record energy generation, Innovation Origins, 2024/02/08, General coverage
4. Recordhoeveelheid energie opgewekt met Europese kernfusiereactor, NRC, 2024/02/08, Interview with M. van Berkel
5. Europese wetenschappers breken eigen kernfusierecord: 'Ontwikkeling gaat hard', nu.nl, 2024/02/08, Interview with M. van Berkel
6. Eindhovense wetenschappers enthousiast over haalbaarheid kernfusie: 'We maakten voor vijf seconden een mini-zon op aarde', ED, 2024/02/08, Interview with M. van Berkel
7. Nieuw record bij kernfusie-experimenten, De Ingenieur, 2024/02/09, General coverage
8. Kernfusie: kleiner is fijner, De Ingenieur, 2024/02/14, Interview with M. de Baar
9. Ontwikkelen manieren om muur van een fusiereactor te beschermen, Engineeringnet.be, 2024/03/21, Interview with T. Wijkamp
10. JET-experimenten leveren nieuw energierecord op, Engineeringnet.be, 2024/02/12, Interview with T. Bosman
11. Bouwen aan de cruise-control van een kernfusiereactor, Engineeringnet.be, 2024/04/24, Interview with G. Derks
12. "What role does TU/e want to play in the realization of nuclear fusion energy?", Cursor TU/e, 2024/05/07, General coverage
13. Marco de Baar: 'We need to cover all scales', EIRES (TU/e Institute), 2024/05/14, Interview with M.R. de Baar
14. Dutch Fusion Day shows drive to realise fusion, EUROfusion news, 2024/05/29, Interview with M.R. de Baar, P. Hieltjes
15. Getting the DICE rolling: DIFFER Irradiation Corrosion Experiment, Thorizon newsletter, 2024/06/01, General coverage
16. Fusion communicators inspired by WEST and ITER, EUROfusion news, 2024/04/05, Interview with R. van Hoek
17. Hoe ingenieur Matthijs van Berkel bij DIFFER onderzoek naar kernfusie leidt (19 min.), NPO Radio 1, 2024/09/05, Interview with M. van Berkel
18. Future of Space (FoS) with Daniel Fox and Tony Donné, Podcast 89 Future of Space with Daniel Fox, 2024/07/16, Interview with T. Donne

19. Clean, green superabundant energy, A podcast visioning quest on X Spaces @FrontierDAO, 2024/10/19, Interview with A.J.H. Donné
20. Differ en Commonwealth Fusion Systems bundelen krachten, Engineeringnet, 2024/09/05, Interview with M. de Baar, S. Wiesen, M. van Berkel
21. Differ helpt Amerikaans CFS met uitlaatregeling kernfusiereactor, Engineersonline, 2024/09/09, Interview with J. Veenendaal, M. Lauret, M. de Baar, S. Wiesen, M. van Berkel
22. Met ballonnen laten zien hoe kernfusie werkt. Reportage Weekend van de Wetenschap, ED, 2024/10/07, Interview with J. Ketelaars, D. van Walderveen, M. van Breukelen
23. Nieuwe 3D-printer op TU/e moet kernfusie mede mogelijk maken, Cursor TU/e, 2024/10/22, Interview with T. Morgan
24. Minister van Klimaat en Groene Groei op werkbezoek bij NWO-instituut DIFFER, duurzaam-ondernemen.nl, 2024/10/21, Interview with B. Tyburska-Pueschel, M. Tsampas, M. de Baar
25. Paving the way for future fusion energy: Exhaust control for SPARC, Innovation News Network, 2024/11/11, Interview with M. de Baar
26. Educating innovators: TU/e's multidisciplinary impact on fusion research, Innovation News Network, 2024/11/22, General coverage
27. 'Eindsprint kernfusie ingezet' Amerikaans bedrijf belooft eerste stroom in 2030, Algemeen Dagblad, 2024/12/20, Interview with M. de Baar

2. Scientific Output DIFFER: Chemical Energy in 2024

PhD theses: 3

1. F. Verdelli, *Plasmonic Particle Arrays for Vibrational Strong Coupling and Polaritonic Chemistry*, PhD thesis at the Eindhoven University of Technology, 2024/09/25, Promotor(s): J. Gomez Rivas; Co-promotor: A. Baldi
2. D. Garcia Rodriguez, *Fabrication and Reactivity of Iron Carbide Films on Copper Substrates as Model Catalysts for Fischer-Tropsch Synthesis*, PhD thesis at the Eindhoven University of Technology, 2024/02/28, Promotor(s): M.C.M. van de Sanden; Co-promotor: C.J. Weststrate
3. Y. Wang, *Data-driven discovery of 2D materials as photocatalysts for water splitting*, PhD thesis at the Eindhoven University of Technology, 2024/07/01, Promotor(s): G. Brocks, M.C.M. van de Sanden; Co-promotor: S. Er

Master theses & Bachelor theses: 5

1. H. Perrier, (Master internship University of Strasbourg:) *Developing Computational Tools for Identifying Adsorption Sites on Bimetallic Catalysts for ORR*, Mentor(s): I.C. Oguz, S. Er, 2024/08/23
2. N. Polese, (Master internship University of Strasbourg:) *Machine Learning Exploration of ORR Catalytic Activity on Metallic (100) Surfaces*, Mentor(s): I.C. Oguz, S. Er, 2024/08/23
3. S. Mesquita, (Master internship University of Strasbourg:) *Machine Learning Exploration of ORR Catalytic Activity on Metallic (110) Surfaces*, Mentor(s): I.C. Oguz, S. Er, 2024/08/23
4. T. Thinel, (Master internship University of Strasbourg:) *Machine Learning Exploration of ORR Catalytic Activity on Metallic (111) Surfaces*, Mentor(s): I.C. Oguz, S. Er, 2024/08/23
5. M. Brunacci, (Bachelor end project report Eindhoven University of Technology:) *Research Bi-metallic catalyst discovery for hydrogen evolution reaction through machine learning-enhanced atomic simulation*, Mentor(s): I.C. Oguz, S. Er, 2024/05/29

Publications in peer-reviewed scientific journals: 37

1. P.P. Kunturu, M. Lavorenti, S. Bera, H. Johnson, S. Kinge, M.C.M. van de Sanden, M.N. Tsampas, *Scaling up BiVO4 photoanodes on Ti porous transport layers for solar hydrogen production*, ChemSusChem 17 (2024) e202300969
2. J. Wang, L. Zeng, D. Zhang, A. Maxwell, H. Chen, K. Datta, A. Caiazzo, W.H.M. Remmerswaal, N.R.M. Schipper, R.A.J. Janssen, et al., *Halide homogenization for low energy loss in 2-eV-bandgap perovskites and increased efficiency in all-perovskite triple-junction solar cells*, Nat. Energy 9 (2024) 70-80
3. X.L. Guo, P. Apostol, X. Zhou, J.D. Wang, X.D. Lin, D. Rambabu, M.Y. Du, S. Er, A. Vlad, *Towards the 4 V-class n-type organic lithium-ion positive electrode materials: the case of conjugated triflimides and cyanamides*, Energy Environ. Sci. 17 (2024) 173-182
4. O. Almora, C.I. Cabrera, S. Erten-Ela, K. Forberich, F. Guo, J. Hauch, A.W.Y. Ho-Baillie, T.J. Jacobsson, R.A.J. Janssen, T. Kirchartz, et al., *Device performance of emerging photovoltaic materials (version 4)*, Adv. Energy Mater. 14 (2024) 2303173
5. Y. Wang, G. Brocks, S. Er, *Data-driven discovery of intrinsic direct-gap 2D materials as potential photocatalysts for efficient water splitting*, ACS Catal. 14 (2024) 1336-1350

6. A.Caiazzo, K. Datta, L. Bellini, M.M. Wienk, R.A.J. Janssen, *Impact of Alkyl chain length on the formation of regular- and reverse-graded quasi-2D Perovskite thin films*, ACS Mater. Lett. 6 (2024) 267-2741
7. G.J.W. Aalbers, T.P.A. van der Pol, K. Datta, W.H.M. Remmerswaal, M.M. Wienk, R.A.J. Janssen, *Effect of sub-bandgap defects on radiative and non-radiative open-circuit voltage losses in perovskite solar cells*, Nat. Commun. 15 (2024) 1276
8. W.H.M. Remmerswaal, B.T. van Gorkom, D. Zhang, M.M. Wienk, R.A.J. Janssen, *Quantifying non-radiative recombination in passivated wide-bandgap Metal Halide Perovskites using absolute photoluminescence spectroscopy*, Adv. Energy Mater. 14 (2024) 2303664
9. A.Abbasi, Y.A. Hugo, Z. Borneman, W. Kout, K. Nijmeijer, *Long-term performance of hydrogen-bromine flow batteries using single-layered and multi-layered wire-electrospun SPEEK/PFSA/PVDF membranes*, Sustain. Energy Fuels 8 (2024) 1549-1565
10. B.T. van Gorkom, A. Simons, W.H.M. Remmerswaal, M.M. Wienk, R.A.J. Janssen, *Sub-bandgap photocurrent spectra of p-i-n Perovskite solar cells with n-doped Fullerene electron transport layers and bias illumination*, ACS Appl. Energy Mater. 7 (2024) 5869-5878
11. B.T. van Gorkom, S.H.W. Fun, T.P.A. van der Pol, W.H.M. Remmerswaal, G.J.W. Aalbers, M.M. Wienk, R.A.J. Janssen, *Identifying the nature and location of defects in n–i–p Perovskite cells with highly sensitive sub-bandgap photocurrent spectroscopy*, Sol. RRL 8 (2024) 2400316
12. L.M. Kessels, W.H.M. Remmerswaal, L.M. van der Pol, L. Bellini, L.J. Bannenberg, M.M. Wienk, T.J. Savenije, R.A.J. Janssen, *Unraveling the positive effects of Glycine Hydrochloride on the performance of Pb-Sn-based Perovskite solar cells*, Sol. RRL 8 (2024) 2400506
13. R.R. Jacquemond, M. van der Heijden, E. Burak Boz, E.R. Carreon-Ruiz, K.V. Greco, J.A. Kowalski, V. Munoz-Perales, F.R. Brushett, K. Nijmeijer, P. Boillatt, A. Forner-Cuenca, *Quantifying concentration distributions in redox flow batteries with neutron radiography*, Nat. Commun. 15 (2024) 7434
14. S. Ghosh, D. Haycock, N. Mehra, S. Bera, H. Johnson, L. Roiban, M. Aouine, P. Vernoux, P. Thune, W.F. Schneider, M.N. Tsampas, *Climbing the Hydrogen Evolution Volcano with a NiTi shape memory alloy*, J. Phys. Chem. Lett. 15 (2024) 933-939
15. S. Kajita, A. Bieberle-Hütter, *Low onset potential for oxygen evolution reaction on hematite electrodes processed with He plasma irradiation*, Int. J. Hydrogen Energy 57 (2024) 1118-1125
16. Q.Q. Qin, H. Suo, L. Chen, Y.X. Wang, J.Z. Wang, H.K. Liu, S.X. Dou, M.M. Lao, W.H. Lai, *Emerging Cu-based tandem catalytic systems for CO_2 electroreduction to multi-carbon products*, Adv. Mater. Interfaces 11 (2024) 2301049
17. M.C. Sorkun, E.N. Ghassemi, C. Yatbaz, J.M.V.A. Koelman, S. Er, *RedPred, a machine learning model for the prediction of redox reaction energies of the aqueous organic electrolytes*, Artif. Intell. Chem. 2 (2024) 100064
18. Y. Wang, M.C. Sorkun, G. Brocks, S. Er, *ML-aided computational screening of 2D materials for photocatalytic water splitting*, J. Phys. Chem. Lett. 15 (2024) 4983-4991
19. F. Verdelli, A. Baldi, J. Gomez Rivas, *Motional narrowing of molecular vibrations strongly coupled to surface lattice resonances*, Phys. Rev. B 109 (2024) 174305
20. A.Ranade, S.Y. Feng, S. Kajita, M.N. Tsampas, *Helium plasma irradiation on Nickel: Nanostructure formation and electrochemical characteristics*, Appl. Surf. Sci. 669 (2024) 160413
21. M. Altin, P. Viegas, L. Vialetto, G.J. van Rooij, P. Diomede, *Spatio-temporal analysis of power deposition and vibrational excitation in pulsed N_2 microwave discharges from 1D fluid modelling and experiments*, Plasma Sources Sci. Technol. 32 (2024) 045008
22. R.T.M. van Limpt, M.M. Lao, M.N. Tsampas, A. Creatore, *Unraveling the role of the stoichiometry of atomic layer deposited Nickel Cobalt Oxides on the Oxygen Evolution Reaction*, Adv. Sci. 11 (2024) 2405188
23. Q. Sun, L. Geng, L. Wang, T. Che, L.C. Xu, J.W. Zhao, Y.L. Zhong, Y. Wang, Y. Yang, L. Kang, *Atomically engineered encapsulation of SnS_2 nanoribbons by single-walled carbon nanotubes for high-efficiency Lithium storage*, ACS Nano Lett. 24 (2024) 7732-7740

24. R. di Santo, F. Verdelli, B. Niccolini, S. Varda, A. del Gaudio, F. Di Giacinto, M. De Spirito, M. Pea, E. Giovine, A. Baldi, A. Notargiacomo, M. Ortolani, A. Di Gaspare, F. Pizzolante, G. Ciasca, *Exploring novel circulating biomarkers for liver cancer through extracellular vesicle characterization with infrared spectroscopy and plasmonics*, Anal. Chim. Acta 1319 (2024) 342959
25. H. Khan, S. Bera, M.J. Jung, S.H. Kwon, *Rational design of photoanodes to produce value-added chemicals coupled with Hydrogen*, ChemElectroChem 11 (2024) e202400239
26. S. Bera, R. van der Breggen, P.P. Kunturu, S. Welzel, M.N. Tsampas, *Electrocatalytic nitrogen reduction in continuous-flow cell via water oxidation at ambient conditions: Promising for ammonia or diazene?*, Electrochem. Commun. 166 (2024) 107794
27. T. Silva, S. Bera, C.D. Pintassilgo, A. Herrmann, S. Welzel, M.N. Tsampas, M.C.M. van de Sanden, L.L. Alves, V. Guerra, *Unraveling NO production in N_2-O_2 plasmas with 0D kinetic modeling and experimental validation*, J. Phys. Chem. A 128 (2024) 7235-7256
28. E.J. Devid, W.A. Bongers, P.W.C. Groen, M. van Ginkel, S. Doyle, F.M.A. Smits, C.F.A.M. van Deursen, K. Serras, S. Labeur, M.A. Gleeson, M.C.M. van de Sanden, *Toroidal CO_2 plasma sources with low- and high-frequency power coupling configurations for improved energy transfer efficiencies*, Plasma 7 (2024) 566-584
29. M.A. Bento, N.A.G. Bandeira, H.N. Miras, A. Moro, J.C. Lima, S. Realista, M.A. Gleeson, E.J. Devid, P. Brandao, J. Rocha, P. Martinho, *Solar light CO2 photoreduction enhancement by mononuclear Rhenium(I) Complexes: characterization and mechanistic insights*, Inorg. Chem. 63 (2024) 18211-18222
30. C.F.A.M. van Deursen, H.M.S. van Poyer, W.A. Bongers, F.J.J. Peeters, F.M.A. Smits, M.C.M. van de Sanden, *Effluent nozzles in reverse-vortex-stabilized microwave CO2 plasmas for improved energy efficiency*, J. CO2 Util. 88 (2024) 102952
31. R. Gubo, D. Garcia Rodriguez, H. Wang, P.J. Ren, H. Xiao, X. Li, X.Q. Pang, X. Yu, J. Xu, X.D. Wen, Y. Yang, Y.W. Li, C.J. Weststrate, J.W. Niemantsverdriet, *Mechanistic insights into CO reactivity on Iron-based catalysts: role of surface atomic carbon*, ACS Catal. 14 (2024) 14721-14732
32. F. Verdelli, Y.C. Wei, K. Joseph, M.S. Abdelkhalik, M. Goudarzi, S.H.C. Askes, A. Baldi, E.W. Meijer, J. Gomez Rivas, *Polaritonic chemistry enabled by non-local metasurfaces*, Angew. Chem. - Int. Edit. 63 (2024) e202409528
33. A. Herrmann, P. Krebaum, S. Bera, M.N. Tsampas, M.C.M. van de Sanden, *Enhanced catalytic probe design for mapping radical density in the plasma afterglow*, J. Phys. Chem. A 128 (2024) 10080-10086
34. J. Bucalossi, A. Ekedahl, WEST team, J. Achard, K. Afonin, O. Agullo, T. Alarcon, L. Allegreti, F. Almuhisen, G.J. van Rooij, et al., EUROfusion Tokamak Exploitation Team, *WEST full tungsten operation with an ITER grade divertor*, Nucl. Fusion 64 (2024) 112022
35. F. Verdelli, Y.C. Wei, J. Scheers, M.S. Abdelkhalik, M. Goudarzi, J. Gomez Rivas, *Ultrastrong coupling between molecular vibrations in water and surface lattice resonances*, J. Chem. Phys. 161 (2024) 184709
36. T. Che, S. Liu, Y. Wang, P. Zhao, C.P. Yang, X.H. Pan, H.Z. Ji, L. Geng, Q. Sun, Z. Hu, A. Li, C.X. Zhou, L.C. Xu, Y.L. Zhong, D. Tian, Y. Yang, L. Kang, *Interfacial charge transfer in one-dimensional AgBr encapsulated inside single-walled carbon nanotube heterostructures*, ACS Nano 18 (2024) 32569-32577
37. Y. Watanabe, C. Tayran, M. Riad-Kasem, A. Yamashita, M. Cakmak, T. Katase, Y. Mizuguchi, *Specific heat analyses on optical-phonon-derived uniaxial negative thermal expansion system $TrZr_2$ (Tr = Fe and Co_{1-x} Ni_x)*, Sci. Rep. 14 (2024) 28018Publications in other journals and conference proceedings: 1

Publications in other journals and conference proceedings: 3

1. M.C.M. van de Sanden, M. Dimitrova, B. Georgieva, C. Ghelev, *Preface Conference Report 23rd International Summer School on Vacuum, Electron and Ion Technologies 2023*, Journal of Physics: Conference Series 2710 (2024) 011001

2. Q. Shen, A. Pikalev, J. Gans, M.C.M. van de Sanden, *Pinpointing energy transfer mechanisms in the quenching process of microwave air plasma - Effect on NO production*, 51st IEEE International Conference on Plasma Science (ICOPS) 58192 (2024) 186-1238
3. X. Chen, A. Pikalev, V. Guerra, G.J. Zhang, M.C.M. van de Sanden, *Synergy for the plasma-based CO_2 conversion with the Solid Oxide Electrolysis Cell*, 51st IEEE International Conference on Plasma Science (ICOPS) 58192 (2024) 1243

Professional publications: 2

1. S. Bera, Preview: Building adaptive active sites in doped-RuO_2 to boost acidic water oxidation performance, Chem Catal. 4 (2024) 101035
2. T.C. van Eeden, T.O.S.J. Bosman, Infographic: Plasma. Geïoniseerd gas met bijzondere eigenschappen, Chemische Feitelijkheden. Actuele encyclopedie over moleculen, mensen, materialen en milieu, Den Haag : KNCV, Chem. Feit. 105 (2024) #410

Invited lectures at conferences and meetings: 29

1. DPG – Frühjahrstagung, 2024/02/26-2024/02/29, Greifswald, Deutschland, M.C.M. van de Sanden, *The role of plasma conversion technology in the greening of the chemical industry*, Plenary PV II
2. EFDS Workshop: Thin Film Technologies - Future Applications of 2.5D Materials, 2024/04/09-2024/04/10, Eindhoven, Netherlands, M.N. Tsampas, *3D Electrodes for Electrochemical Energy Storage and Conversion*
3. Plasma Processing and Technology International Conference (Plasma Tech) 2024, 2024/04/17-2024/04/19, Vienna, Austria, M.C.M. van de Sanden, *Renewable electricity driven chemistry for energy conversion and storage: Novel pathways provided by plasma enhanced chemistry*, Keynote II. C
4. Symposium Circularity: The New Shape of Chemistry 2024, 2024/05/21, Eindhoven, Netherlands, S. Er, *Exploring the chemical space through computational screening and AI to discover molecules for energy storage*, Oral 15:55
5. ACHEMA 2024 World Forum for the Process Industries (#process: Electrified and flexible), 2024/06/10-2024/06/14, Frankfurt am Main, Germany, M.C.M. van de Sanden, *Renewable electricity driven chemistry for energy conversion and storage: Novel pathways provided by plasma enhanced chemistry*, Oral Consens-4.C
6. ACHEMA 2024 World Forum for the Process Industries (#green: Circular economy), 2024/06/10-2024/06/14, Frankfurt am Main, Germany, M.C.M. van de Sanden, S. Welzel, A. Goede, M.N. Tsampas, *Plasma CO_2 utilization: on the development of a KEROGREEN reactor module for sustainable CO production and the challenges in CO_2 plasmolysis and gas separation*, Oral Symmetrie 3-8.1
7. 2nd International Conference on Laser, Plasma and Radiation - Science and Technology (ICLPR-ST 2024), 2024/06/16-2024/06/21, Danube Delta, Romania, M.C.M. van de Sanden, *Renewable electricity driven chemistry for energy conversion and storage: Novel pathways provided by plasma enhanced chemistry*, Plenary 1
8. 6th International Symposium on Plasmas for Catalysis and Energy Materials (ISPCEM 2024), 2024/07/10-2024/07/12, Eindhoven, Netherlands, M.C.M. van de Sanden, *Renewable electricity driven chemical conversion: Novel pathways provided by plasma enhanced chemistry*, Plenary
9. Materials Science and Engineering Congress MSE 2024, 2024/09/24-2024/09/26, Darmstadt and online, Germany, S. Er, *AI-guided computational identification of 2D materials for energy*, Online M06.01
10. Emission Control Workshop (ECW 2024) Catalysis for energy and environmental protection, 2024/09/26-2024/09/27, Hybrid, Brescia, Italy, M.N. Tsampas, *Material development via unconventional pathways for hydrogen production*, Oral Session 1 Hydrogen Economy 15:40-16:00

11. 17th Panhellenic Symposium on Catalysis (PSC 2024), 2024/10/08-2024/10/10, Paphos, Cyprus, M.N. Tsampas, *Novel operation modes and architectures of electrocatalytic systems for renewable energy driven chemistry*, Keynote
12. 77th Annual Gaseous Electronics Conference (GEC 2024), 2024/09/30-2024/10/04, San Diego, CA, USA, M.C.M. van de Sanden, *Renewable electricity driven chemistry for energy conversion and storage: Novel pathways provided by plasma enhanced chemistry*, Oral GM2.00001
13. 77th Annual Gaseous Electronics Conference (GEC 2024), 2024/09/30-2024/10/04, San Diego, CA, USA, T. Silva, S. Bera, R. Martins, A. Meindl, C.D. Pintassilgo, A. Herrmann, S. Welzel, M.N. Tsampas, M.C.M. van de Sanden, M. Ribeiro, *Plasmas for ISRU and gas conversion on Mars*, Oral DF2.00001
14. 245th ECS Meeting 2024, 2024/05/26-2024/05/30, San Francisco, CA, USA, P.T.P. Le, J.M. Sturm, G. Koster, A. Bieberle-Hütter, C. Baeumer, *Electrolyte-Induced Fe-Doping of $LaNiO_3$ Model Surfaces for Water Electrolysis*, Oral I01-1855
15. Amsterdam Centre for Electrochemistry Amcel Symposium 2024, 2024/11/01, Amsterdam, Netherlands, A. Bieberle-Hütter, *Combining experiments and modeling to identify the limitations at electrochemical interfaces*, Oral 11:25
16. M2i Conference 2024 Theme 1 Advanced Metals, 2024/12/09, Arnhem, Netherlands, C. Tayran, S. Er, *First-principles investigation of tungsten-based fusion materials*, Oral 14:20
17. M2i Conference 2024 Theme 4 Machine Learning/Autonomous Labs, 2024/12/09, Arnhem, Netherlands, S. Er, *Developing a self-driving lab for electrochemistry: from concept to creation*, Oral 13:40
18. CECAM Flagship Workshop Challenges and perspective in computational modelling for fusion reactors, 2024/10/28-2024/10/29, Lausanne, Switzerland, S. Er, C. Tayran, *Optimizing plasma-facing materials for fusion reactors with advanced simulations*, Oral Materials Modelling II (Plasma Facing) 14:45
19. MRS Fall Meeting 2024, 2024/12/01-2024/12/06, Boston, MA, USA, S. Er, Y. Wang, M.C. Sorkun, C. Tayran, G. Brocks, *Prediction of 2D materials for energy applications using computational methods*, Oral MT03.05.01
20. MRS Fall Meeting 2024, 2024/12/01-2024/12/06, Boston, MA, USA, A. Bieberle-Hütter, *Combining Experiments and Modeling to Identify the Limitations at Electrochemical Interfaces*, Oral CH02.07.01
21. NWO NERA Energy Symposium 2024, 2024/02/02, Utrecht, Netherlands, R.A.J. Janssen, O. Isabella, *Towards high-efficiency hybrid tandem solar cells*, Oral 11:00
22. Materials for Sustainable Development Conference (MATSUS 2024), 2024/03/04-2024/03/08, Barcelona, Spain, R.A.J. Janssen, *Material and device design for multijunction perovskite solar cells*, Oral #PerTanCell
23. MRS Spring Meeting 2024, 2024/04/22-2024/04/26, Seattle, WA, US, R.A.J. Janssen, *Material and device design for multijunction perovskite solar cells*, Oral *EN01.01.01 Organic PV
24. 26th International Conference on Science and Technology of Synthetic Electronics Materials (ICSM) 2024, 2024/06/23-2024/06/28, Dresden, Germany, R.A.J. Janssen, *Material and device design for multijunction perovskite solar cells*, Oral S-05-06
25. EcoMat Conference 2024, 2024/07/08-2024/07/10, Newcastle, UK, R.A.J. Janssen, *Material and device design for multijunction perovskite solar cells*, Keynote D2.1
26. SPIE Optics and Photonics 2024, 2024/08/18-2024/08/22, San Diego, CA, USA, R.A.J. Janssen, *Material and device design for multijunction perovskite solar cells*
27. 1st International Summit of Advanced Energy and Functional Materials Research (AEFM 2024), 2024/09/30-2024/10/03, Illmenau, Germany, R.A.J. Janssen, *Multijunction perovskite solar cells*, Keynote Session C
28. SAMSEC Conference (Sustainable Advanced Materials for Solar Energy Conversion) 2024, 2024/08/27-2024/08/29, Potsdam, Germany, R.A.J. Janssen, *What can we learn from sub-bandgap photocurrent spectroscopy?*
29. 9th Next Generation Solar Energy Conference NGSE 2024, 2024/12/10-2024/12/12, Nürnberg, Germany, R.A.J. Janssen, *What can we learn from sub-bandgap photocurrent spectroscopy?,* Oral Wednesday 14.30

Invited seminars: 11

1. Seminar at University of Toronto, Toronto, Canada, 2024/02/12, M.R. de Baar, *Autonomous Robotics for Chemistry*
2. Seminar at IRESEN and the University Mohammed 6 Polytechnique (UM6P), Ben Guerir, Morocco, 2024/04/05, M.R. de Baar, *A facility for autonomous chemistry?*
3. AMOLF Colloquium 2024, 2024/04/08, Amsterdam, Netherlands, S. Er, *Towards Autonomous Discovery of Energy Materials*
4. Seminar DTU Nanolab, 2024/04/04, Copenhagen, Denmark, M.C.M. van de Sanden, *Renewable energy driven chemical conversion for green molecules and fuels: a plasma pespective*
5. Schrödinger Quarterly Materials Science Lunch and Learn Seminar 2024, 2024/04/14, Online, USA, S. Er, *Automating the virtual screening of small molecules for energy storage*
6. Invited Seminar Helmholtz Center, 2024/05/03, Erlangen, Germany, A. Bieberle-Hütter, *Metal oxide thin films for photo-electrochemical water splitting: a combined experimental and computational approach*
7. Invited Seminar Forschungszentrum Jülich, 2024/05/13, Jülich, Germany, A. Bieberle-Hütter, *Metal oxides in electrochemical applications: From our combined experimental and computational approach to DIFFER's new PLD*
8. GCMAC workshop at Accelerate 2024: Integration and Automation of Materials Characterization Techniques (Part I), 2024/08/09, Online, Germany, Canada, S. Er, *Towards Autonomous Discovery of Energy Materials*
9. 3rd EuroTech PhD Summer School on Hydrogen, 2024/08/26-2024/08/30, Eindhoven, Netherlands, M.C.M. van de Sanden, *Large scale production of hydrogen in the Netherlands: status and challenges ahead*
10. TU Delft ChemE Faculty Colloquium, 2024/11/18, Delft, Netherlands, S. Er, *Towards a Self-Driving Lab for Energy Materials Discovery*
11. Conference "Functional Materials Engineering" FME 2024, 2024/09/30-2024/10/03, Hasselt, Belgium, R.A.J. Janssen, *Organic and metal-halide perovskite photovoltaics*, Masterclass session 1

Other oral and poster presentations at (international) conferences & meetings: 31

1. EERA COST Workshop on Digitalization and Automation Boost Energy Materials Research, 2024/01/24-2024/01/25, Rome, Italy, A. Bieberle-Hütter, *Multiscale modeling of electrochemical interfaces: Challenges and chance*, Oral
2. Physics Veldhoven 2024, 2024/01/24-2024/01/25, Veldhoven, Netherlands, Y. Wang, G. Brocks, S. Er, *Data-driven discovery of intrinsic direct-gap 2D materials as potential photocatalysts for efficient water splitting*, Oral Parallel sessions L
3. Physics Veldhoven 2024, 2024/01/24-2024/01/25, Veldhoven, Netherlands, J. Gans, M.C.M. van de Sanden, *Nitrogen fixation - synergy between microwave plasma and catalyst*, Poster
4. Physics Veldhoven 2024, 2024/01/24-2024/01/25, Veldhoven, Netherlands, T.C. van Eeden, M.C.M. van de Sanden, W.A. Bongers, Q. Shen, V. Laitl, *Studying non-thermal N_2/O_2 plasmas using in situ Raman spectroscopy*, Poster
5. Physics Veldhoven 2024, 2024/01/24-2024/01/25, Veldhoven, Netherlands, A. Herrmann, M.N. Tsampas, M.C.M. van de Sanden, *Nitrogen radical density mapping in RF inductively coupled flow reactors*, Poster
6. Physics Veldhoven 2024, 2024/01/24-2024/01/25, Veldhoven, Netherlands, Q. Shen, F.J.J. Peeters, M.C.M. van de Sanden, *Multitemperature model of the non-thermal plasma chemical dissociation of CO_2*, Poster

7. COST CA18234 Conference Catalysts for water splitting and energy storage, 2024/04/03-2024/04/05, Wien, Austria, A. Bieberle-Hütter, B.F.H. van den Boorn, M. van Berkel, *Microkinetic modeling of the oxygen evolution reaction: extended model and sensitivity analysis*, Oral
8. FYSICA 2024 (NNV) Physics at the Human Scale, 2024/04/12, Eindhoven, Netherlands, M.N. Tsampas, *The future of electrolysis*, Oral (Focus session Renewable Energy Research Eindhoven)
9. 15th Frontiers in Low Temperature Plasma Diagnostics 2024 FLTPD XV, 2024/04/28-2024/05/02, Prague, Czech Republic, T.C. van Eeden, V. Laitl, A.W. van de Steeg, A.J. Hughes, V.H. Le, W.A. Bongers, M.C.M. van de Sanden, *Studying N_2/O_2 microwave plasmas using operando Raman spectroscopy*, Poster
10. GVNL-ECCM Graduate School 2024, 2024/06/18-2024/06/21, Noordwijk, Netherlands, C. Mempin, D. Sarkar, A. Bieberle-Hütter, *Attenuated Total Reflection Fourier Transform Infrared (ATR-FTIR) Spectroscopy of Hematite for Photoelectrochemical Water Splitting*, Poster
11. 41st Annual Conference of JSPF (the Japan Society of Plasma Science and Nuclear Fusion Research) 2024, 2024/11/17-2024/11/20, Toyama, Japan, S. Kajita, A. Bieberle-Hütter, *Effect of Helium Plasma Treatment on the Onset Potential Shift of Oxygen Evolution Reaction Using Hematite*, Oral
12. 26th ESCAMPIG (Europhysics Conference on Atomic and Molecular Physics of Ionized Gases) 2024, 2024/07/09-2024/07/13, Brno, Czech Republic, L. Kuijpers, C.F.A.M. van Deursen, E.J. Devid, W.A. Bongers, M.C.M. van de Sanden, *Experimental investigation of the complex chemistry in dry reforming microwave discharges*, Poster P2-T3-04
13. 26th ESCAMPIG (Europhysics Conference on Atomic and Molecular Physics of Ionized Gases) 2024, 2024/07/09-2024/07/13, Brno, Czech Republic, A. Pikalev, X.Y. Chen, V. Guerra, G.J. Zhang, M.C.M. van de Sanden, *Insights into CO_2 conversion with plasma-electrolysis synergy*, Poster P1-T3-05
14. 26th ESCAMPIG (Europhysics Conference on Atomic and Molecular Physics of Ionized Gases) 2024, 2024/07/09-2024/07/13, Brno, Czech Republic, J. Gans, Q. Shen, A.J. Hughes, C.F.A.M. van Deursen, W.A. Bongers, F.J.J. Peeters, M.C.M. van de Sanden, *Nitrogen fixation: Synergy between microwave plasma and catalyst*, Poster P1-T3-07
15. 26th ESCAMPIG (Europhysics Conference on Atomic and Molecular Physics of Ionized Gases) 2024, 2024/07/09-2024/07/13, Brno, Czech Republic, Q. Shen, A. Pikalev, J. Gans, M.C.M. van de Sanden, *Understanding NO formation and destruction by non-thermal effect in the quenching process of microwave air plasma*, Poster P2-T6-49
16. 2024 Gordon Research Seminar Renewable Energy: Solar Fuels, 2024/02/03-2024/02/04, Ventura, CA, US, B.F.H. van den Boorn, M. van Berkel, A. Bieberle-Hütter, *The Oxygen Evolution Reaction and charge-carrier dynamics in a combined spatio-temporal microkinetic model for photo-electrochemical water splitting*, Oral Saterday 8:25 pm
17. 2024 Gordon Research Conference Renewable Energy: Solar Fuels - Frontiers in Photon-Driven Fuel Production, 2024/02/04-2024/02/09, Ventura, CA, US, B.F.H. van den Boorn, M. van Berkel, A. Bieberle-Hütter, *Oxygen Evolution Reaction and charge-carrier dynamics in a spatio-temporal microkinetic model for PEC water splitting*, Poster
18. 2024 Gordon Research Conference Renewable Energy: Solar Fuels, 2024/02/04-2024/02/09, Ventura, CA, US, D. Sarkar, H. Ichou, S. Diring, L. Choubrac, N. Barreau, F. Odobel, M. Robert, *Molecular photoelectrodes for artificial photosynthesis: CO_2 reduction with non-noble metal*, Poster
19. Groenvermogen nl GVNL-ECCM Graduate School 2024, 2024/06/18-2024/06/21, Noordwijk, Netherlands, D. Sarkar, S. Ganguli, A. Mondal, V. Mahalingam, *Silicate precatalyst - A unique substrate for improved oxygen evolution reaction*, Poster
20. 6th International Symposium on Plasmas for Catalysis and Energy Materials (ISPCEM 2024), 2024/07/10-2024/07/12, Eindhoven, Netherlands, E. Devid, M.C.M. van de Sanden, M.A. Gleeson, *Gasification of carbon with CO2 plasma to produce CO under low vacuum*, Oral Session 7

21. 3rd International Conference on Unconventional Catalysis, Reactors and Applications 2024 UCRA3, 2024/09/17-2024/09/20, Warsaw, Poland, M.C.M. van de Sanden, X. Chen, A. Pikalev, A. Herrmann, V.L. Guerra, G.J. Zhang, *Synergy for the plasma-based CO2 conversion with the Solid Oxide Electrolysis Cell*, Oral Session 03 Hybrid systems
22. 17th Panhellenic Symposium on Catalysis (PSC 2024), 2024/10/08-2024/10/10, Paphos, Cyprus, P.P. Kunturu, M. Lavorenti, S. Bera, H. Johnson, S. Kinge, M.C.M. van de Sanden, M.N. Tsampas, *Scaling up BiVO4 Photoanodes on Porous Ti Transport Layers for Solar Hydrogen Production*, Oral Session 3
23. 77th Annual Gaseous Electronics Conference (GEC 2024), 2024/09/30-2024/10/04, San Diego, CA, USA, J. Gans, Q. Shen, A.J. Hughes, W.A. Bongers, C.F.A.M. van Deursen, T.C. van Eeden, F.J.J. Peeters, M.C.M. van de Sanden, *Nitrogen fixation: Synergy between air plasma and heterogenous catalyst for NOx production*, Oral GR4.00004
24. 28th International School on Low Temperature Plasma Physics: Basics and Applications 2024, 2024/10/08, Bad Honnef, Germany, L. Kuijpers, C.F.A.M. van Deursen, E.J. Devid, W.A. Bongers, M.C.M. van de Sanden, *Unravelling the complex chemistry of DRM microwave discharges*, Poster
25. EIRES Energizing Day 2024, 2024/11/19, Eindhoven, Netherlands, C. Tayran, S. Er, *Vanadium-Enhanced Tungsten for Fusion Reactors*, Poster
26. M2i Conference 2024, 2024/12/09, Arnhem, Netherlands, C. Tayran, S. Er, *First-Principles Investigation of Tungsten-Based Fusion Materials*, Poster
27. EIRES Energizing Day 2024, 2024/11/19, Eindhoven, Netherlands, I.C. Oguz, S. Er, *AI-Driven Bimetal Catalyst Discovery for Green Hydrogen*, Poster
28. CHAINS 2024 'Transformation', 2024/12/03-2024/12/04, Veldhoven, The Netherlands, L. Kuijpers, C.F.A.M. van Deursen, E.J. Devid, W.A. Bongers, M.C.M. van de Sanden, *Microwave plasma based Dry Reforming of Methane: The case of 0-30% methane*, Poster 1.07T
29. CHAINS 2024 'Transformation', 2024/12/03-2024/12/04, Veldhoven, The Netherlands, C. Mempin, D. Sarkar, vande Put, V. Le, O. Diaz-Morales, A. Bieberle-Hütter, *ATR-FTIR Spectroscopy using Waveguide-Coupled Multi-reflection Crystal for Water Splitting*, Poster
30. Dutch Computational Science (DUCOMS) Day 2024, 2024/11/12, Utrecht, The Netherlands, B.F.H. van den Boorn, M. van Berkel, A. Bieberle-Hütter, *Simulating photo-electrochemical water splitting: a spatio-temporal microkinetic model of the semiconductor and interface*, Poster
31. E-MRS Fall Meeting 2024, 2024/09/16-2024/09/19, Warsaw, Poland, M.M. Lao, S. Bera, S. Ghosh, M.N. Tsampas, *Nitinol: A promising PGM-free catalyst for Hydrogen Evolution Reaction in anion exchange membrane water electrolysis*, Oral D01 Monday 9:50

Positions, including editorships: 33 / Number of editorships: 6

1. M.C.M. van de Sanden, Member of the EASAC Energy Steering Panel (European Academies) (since 2014), 2024
2. M.C.M. van de Sanden, Captain of Science Topteam Energie, Board of Topsector Energie (2023-2030), 2024
3. M.C.M. van de Sanden, Senior Advisory Board Member of Plasma Sources: Science and Technology (since 2005, Senior since 2014), 2024
4. M.C.M. van de Sanden, Member of the Editorial Board of the Journal "Applied Sciences" (since 2016), 2024
5. M.C.M. van de Sanden, Editorial Board member of the journal Global Transitions (since 2018), 2024
6. M.C.M. van de Sanden, International Advisory Board for the journal Plasma Processes and Polymers (since 2002), 2024
7. A.Bieberle-Hütter, COST Action 22123 EU-MACE Management committee member for the Netherlands (European Materials Acceleration Center for Energy, 2023-2027), 2024

8. A.Bieberle-Hütter, Member Management Committee for Netherlands for COST Action 18234 Computational materials sciences for efficient water splitting with nanocrystals from abundant elements (2019-2024), 2024
9. A.Bieberle-Hütter, Subprogram leader: Materials Science, European joined program EERA AMPEA (since 2019), 2024
10. A.P.H. Goede, Fellow of European Physical Society (since 2011), 2024
11. A.Bieberle-Hütter, Member Scientific Advisory Council for Energy Ville, Genk, Belgium (since 2023) and member Scientific Committee Proposal selection flagship project for 2024, 2024
12. A.Bieberle-Hütter, Monitor expert for EIC Pathfinder project ICONIC (Dec 18th 2024), 2024
13. M.C.M. van de Sanden, Member Board NWO Domain Applied and Engineering Sciences (AES, in Dutch: TTW) (since 2021), 2024
14. A.Bieberle-Hütter, Member Panel discussion Organic Electrosynthesis: from lab to scale up and Chemical Conversion at Amcel Symposium 2024, Amsterdam, Netherlands, 2024
15. M.N. Tsampas, Member Panel Discussion at International Symposium on Solid Oxide Cells for next generation power plants and applications: SOCs in the Netherlands and Groningen, 23 April 2024 17:00 in Groningen, Netherlands, 2024
16. A.P.H. Goede, Member of the Technical Advisory Board of the German BMBF KOPERNIKUS 10 year Programme P2X (since 2016), 2024
17. M.C.M. van de Sanden, Fellow of the International Plasma Chemistry Society (since 2017), 2024
18. A.Bieberle-Hütter, Member editorial board Journal of Physics: Energy (since 2022), 2024
19. A.Bieberle-Hütter, Member editorial board of the Dutch physics.org website (since 2018), 2024
20. A.Bieberle-Hütter, Member Advisory board Raad voor de Scheikunde (Dutch Chemistry Council) (since 2020), 2024
21. S. Er, Member NWO Research Community for Chemistry Fundamentals and Methods of Chemistry, 2024
22. M.C.M. van de Sanden, Partime professorship in the Department EIRES (since 2011 after fulltime since 2000), 2024
23. G.J. van Rooij, Professor Plasma Chemistry at Faculty of Science and Engineering Maastricht University (since 2020), 2024
24. S. Er, Member TU/e-EIRES Management Team, 2024
25. S. Er, Member Scientific Integrity Liaison Team, between DIFFER and NWO, 2024
26. S. Er, Member NWO Physics Research Community Nano, Quantum and Materials, 2024
27. S. Er, Member NWO Research Community for Chemistry of Materials, 2024
28. A.Bieberle-Hütter, Member NWO Chemistry Research Communities Chemistry of Materials and Chemical Conversion, 2024
29. A.Bieberle-Hütter, Member NWO Theme commitee Materials Science (vision document Dutch materials) (since 2023), 2024
30. M.C.M. van de Sanden, Member KNAW Klimaat Klankbordgroep (since 2021), 2024
31. M.C.M. van de Sanden, Member of the Royal Netherlands Academy of Arts and Sciences (KNAW) (since 2013), 2024
32. S. Er, Member KNCV Royal Netherlands Chemical Society (since 2024), 2024
33. S. Er, Member KIVI Koninklijk Instituut Van Ingenieurs (since 2024), 2024

Public events and industry contacts: 2

1. Dutch Parlement members breakfast / Tweede Kamer leden ontbijt, 2024/09/07, the Hague, Netherlands, M.C.M. van de Sanden, *Innovatie in de energietransitie*

2. De Balie debatcentrum - Wat betekent de banden breken met de fossiele industrie, 2024/11/28, Amsterdam, Netherlands, M.C.M. van de Sanden, *Invited guest in Debate Op naar een fossielvrije universiteit?*

Awards: 2

1. A.Herrmann, 2024 Best Poster Award at 6th international symposium on plasmas for catalysis and energy materials (ISPCEM), Eindhoven, Netherlands, 2024/07/12
2. T. van Eeden, 2024 Best Poster Award at Frontiers in Low Temperature Plasma Diagnostics conference Prague, Czech Republic, 2024/05/02

Media appearances: 17

1. *We don't need the fossil industry for a fossil-free future*, Cursor TU/e, 2024/03/07, Interview with R. van de Sanden
2. *VSParticle Nanoprinting technology creates new research opportunities for energy material development at DIFFER*, Blog VSParticle.com, 2024/06/01, Interview with S. Er, M. de Baar
3. *Circulaire brandstof: onderzoekers en technici werken hand in hand aan de oplossingen van morgen*, Leiden University News, 2024/06/24, General coverage
4. *Grüne Chemie: Künstliche Blitze erzeugen klimaneutrale Wertstoffe*, Deutschlandfunk.de (Forschung aktuell), 2024/07/11, Interview with R. van de Sanden
5. *The role of the engineer (One of four crucial transitions)*, Podcasts innovatiefestival TEKNOWLOGY 2024, Deel 4, 2024/07/26, Interview with R. van de Sanden
6. *DIFFER en Toyota werken samen aan oplossingen voor CO2-reductie*, Duurzaam-ondernemen.nl, 2024/08/26, Interview with M. Tsampas
7. *Ontwikkeling van uniek CO2-afvangapparaat in volle gang*, Innovation Origins, 2024/08/26, General coverage
8. *Nieuwe uitvinding DIFFER en Toyota gebruikt zon voor opslag CO_2*, Solar Magazine, 2024/08/27, Interview with M. Tsampas
9. *DIFFER en Toyota ontwikkelen oplossing voor CO_2-reductie*, Engineeringnet.be, 2024/08/27, General coverage
10. *Eindhovens onderzoeksinstituut wil samen met autobouwer CO_2 uit de lucht filteren*, Studio 040, 2024/08/27, Interview with M. Tsampas
11. *Collaboration to filter CO_2 from the air*, Eindhoven News, 2024/08/28, Interview with M. Tsampas
12. *Nederlands instituut onderzoekt nieuwe methode voor CO_2-verwijdering*, Energeia, 2024/08/29, Interview with M. Tsampas
13. *Differ laat de zon de lucht zuiveren; Eindhovense uitvinding haalt CO_2 uit de lucht*, Eindhovens Dagblad (ED), 2024/10/02, Interview with M. Tsampas
14. *Minister van Klimaat en Groene Groei op werkbezoek bij NWO-instituut DIFFER*, duurzaam-ondernemen.nl, 2024/10/21, Interview with B. Tyburska-Pueschel, M. Tsampas, M. de Baar
15. *Challenger50 van 2024: VSParticle (Nanoprinter technology)*, MT/Sprout, 2024/11/07, General coverage
16. *Meta FAIR and VSParticle launch catalyst database designed to accelerate clean energy transition*, insideHPC, 2024/11/20, General coverage
17. *Dossier Techniektalenten 'Ik wil een impact hebben op de maatschappij'*, De Ingenieur.nl, 2024/12/15, Interview with M. van Apeldoorn

3. Scientific Output DIFFER: Facilities & Instrumentation in 2024

Master theses & Bachelor reports: 1

1. J.K. Elenbaas, (Master thesis Eindhoven University of Technology:) *The effect of isotope exchange on deuterium retention in tungsten under ITER-like conditions*, Mentor(s): T.W. Morgan, M. Morbey, B. Tyburska-Pueschel, 2024/01/02

Publications in peer-reviewed scientific journals: 5

[concerns Research Departments papers co-authored by members F&I, apart from the first]

1. S. Möller, D. Höschen, W. Arnold Bik, B. Tyburska-Püschel, *An MeV Proton Irradiation Facility: DICE*, Mater. 17 (2024) 3646
2. M. Morbey, J. Gonzalez, W. Arnold Bik, B. Tyburska-Pueschel, T.W. Morgan, *Deuterium retention in co-deposition with lithium in Magnum-PSI: experimental analysis and comparison with SOLPS-ITER*, Nucl. Fusion 64 (2024) 076019
3. S. Kajita, D. Nishijima, K. Fujii, H. Tanaka, J. Vernimmen, H. van der Meiden, I. Classen, N. Ohno, *Machine learning aided line intensity ratio method for helium-hydrogen mixed recombining plasmas*, Plasma Phys. Control. Fusion 66 (2024) 105005
4. F. Romano, V.F.B. Tanke, J. Schwartz, S. Brons, R. Goldston, T.W. Morgan, *Lithium vapour-box divertor module design for investigating vapour shielding performance and lithium transport in linear plasma generator Magnum-PSI*, Fusion Eng. Des. 208 (2024) 114659
5. F. Federici, B. Lipschultz, G.R.A. Akkermans, K. Verhaegh, M.L. Reinke, I.G.J. Classen, Magnum-PSI team, *Effect of detachment on Magnum-PSI ELM-like pulses: Direct observations and qualitative results*, Nucl. Fusion 64 (2024) 126068

Invited seminars: 1

1. MIMOSA Summer School 2024 on Molten Salt Reactors (MSR), 2024/07/08-2024/07/12, Delft, Netherlands, B. Tyburska-Pueschel, *Proton irradiation as proxy for neutron irradiation*, Oral 10 july 13:30

Oral and poster presentations at (international) conferences & meetings: 11

1. Physics Veldhoven 2024, 2024/01/23-2024/01/24, Veldhoven, Netherlands, F. Romano, V. Tanke, J. Gonzalez Munoz, J. Schwartz, S. Brons, R. Goldston, L. Romers, P. de Laat, T.W. Morgan, *Studying the physics of the lithium vapour box in the linear plasma generator Magnum-PSI*, Oral Parallel sessions K
2. Joint ICTP-IAEA School on Data for Modelling Atomic and Molecular Processes in Plasmas, 2024/03/18-2024/03/22, Griagnano, Italy, K. Schutjes, I.G.J. Classen, J.W.M. Vernimmen, K.J. Loring, H.J. van der Meiden, Magnum-PSI team, *Design of TALIF and CARS diagnostics for measuring atomic and molecular Hydrogen densities in divertor-relevant plasmas*, Poster P30

3. 26th International Conference on Plasma Surface Interaction in Controlled Fusion Devices 2024 (PSI-26), 2024/05/12-2024/05/17, Marseille, France, I.G.J. Classen, J.W.M. Vernimmen, H.J. van der Meiden, *Active spectroscopy on Magnum-PSI to characterize neutral particles in detached conditions*, Poster P3-007
4. 26th International Conference on Plasma Surface Interaction in Controlled Fusion Devices 2024 (PSI-26), 2024/05/12-2024/05/17, Marseille, France, M.J.H. Cornelissen, B. Tyburska-Pueschel, J.D.E. Verstappen, I.G.J. Classen, J.W.M. Vernimmen, S. Brons, M. Rasinski, E. Zoethout, D. Dorow-Gerspach, S. Brezinsek, J. Beckers, T.W. Morgan, *The impact of entrainment on the erosion and re-deposition of tungsten under ITER-like plasma conditions*, Poster P1-038
5. 26th International Conference on Plasma Surface Interaction in Controlled Fusion Devices 2024 (PSI-26), 2024/05/12-2024/05/17, Marseille, France, F. Romano, V.F.B. Tanke, J. Gonzalez, J. Schwartz, S. Brons, R. Goldston, L. Romers, P. de Laat, T.W. Morgan, *Lithium vapour box module for liquid metal experimental campaigns in the linear plasma generator Magnum-PSI*, Poster P1-098
6. 26th International Conference on Plasma Surface Interaction in Controlled Fusion Devices 2024 (PSI-26), 2024/05/12-2024/05/17, Marseille, France, H. Tanaka, Y. Hayashi, S. Kajita, D. Hwangbo, J.W.M. Vernimmen, J.G.A. Scholte, H.J. van der Meiden, I.G.J. Classen, T.W. Morgan, N. Ohno, *Detached plasma fluctuation and radial transport behavior at high/low magnetic field in Magnum-PSI*, Poster P1-003
7. 26th International Conference on Plasma Surface Interaction in Controlled Fusion Devices 2024 (PSI-26), 2024/05/12-2024/05/17, Marseille, France, K. Schutjes, I.G.J. Classen, J.W.M. Vernimmen, K.J. Loring, H.J. van der Meiden, Magnum-PSI team, *Design of CARS diagnostic for measuring rovibrational populations of hydrogen in divertor-relevant plasmas*, Poster P4-024
8. 8th International Symposium on Liquid Metals Applications for Fusion (ISLA-8) 2024, 2024/09/08-2024/09/12, Hefei, China, J.G.A. Scholte, R. Al, D. Horsely, M. Iafrati, J.W.M. Vernimmen, T.W. Morgan, *Tin droplet ejection under hydrogen plasma exposure*, Oral
9. 8th International Symposium on Liquid Metals Applications for Fusion (ISLA-8) 2024, 2024/09/08-2024/09/12, Hefei, China, V.F.B. Tanke, S. Brons, F. Romano, J. Scholten, R.H.M. Timmer, J.W.M. Vernimmen, T.W. Morgan, *The use of optical diagnostics during liquid metal vapour deposition in high heat flux linear plsma generators*, Oral
10. 8th International Symposium on Liquid Metals Applications for Fusion (ISLA-8) 2024, 2024/09/08-2024/09/12, Hefei, China, T.W. Morgan, R.S. Al, S. Alonso van der Westen, H. Beens, S. Brons, J.A.W. van Dommelen, H.J.N. van Eck, M.G. D. Geers, H.J. van der Meiden, M. Morbey, C.A. Orrico, M.J. van de Pol, F. Romano, J.G.A. Scholte, J. Scholten, V.F.B. Tanke, R.H.M. Timmer, J.W.M. Vernimmen, E.G.P. Vos, *Progress in the development of LiMeS-lab*, Oral
11. 66th Annual Meeting of the APS Division of Plasma Physics, 2024/10/07-2024/10/11, Atlanta, GA, USA, K. Loring, E.A.L. Visser, C.J.D. Robben, K. Schutjes, J.W.M. Vernimmen, H.J. van der Meiden, I.G.J. Classen, S.H. Glenzer, *Spatially-resolved TALIF measurements of atomic hydrogen density, temperature, and velocity in the Upgraded Pilot-PSI linear device*, Poster PO05.00001

Public events and industry contacts: 4

1. Onboarding in Research Software Management, event for new Research Software Engineers (RSEs), 2024/06/20, Utrecht, Netherlands, P.W.C. Groen, G. Kaas, *DIFFER @ TechBizz, Workshop at public library Helmond-Peel*, Oral Public Engagement
2. Natuurkundig Genootschap 'Wessel Knoops', 2024/12/10, Arnhem, Netherlands, H.J.N. van Eck, *Kernfusie. Stand van zaken en de uitdagingen*
3. Library Helmond-Peel, 2024/08/28, Helmond, Netherlands, G. Kaas, P.W.C. Groen, *TechBizz workshop for kids aged 8-12 years by DIFFER: Build a game*

4. Dutch Power Event Kernenergie, grensverleggende energiemix concepten, 2024/02/29, Eindhoven, Netherlands, B. Tyburska-Püschel, *DICE DIFFER's Irradiation-Corrosion Experiment*

Positions: 1

1. B. Tyburska-Pueschel, Member Euratom Scientific and Technical Committee (since 2020), 2024

Media appearances: 6

1. *Particle measurements at DIFFER made possible by new Delta power supplies*, CN Rood Power Supplies, 2024/02/22, Interview with W. Melissen
2. *Nederland gastland voor Europees Centre of Excellence voor fusie-energie*, Engineersonline.nl, 2024/10/23, Interview with M. de Baar
3. *'Kernenergie wordt in de toekomst essentieel' (with Photo of DICE at DIFFER)*, Peelbelang Online, 2024/07/04, General coverage
4. *Van levensechte robots tot proefjes: hier ontdek je hoe leuk wetenschap is*, Indebuurt, 2024/09/25, General coverage
5. *Differ en Gauss Fusion starten Centre of Excellence voor fusie-energie*, Engineeringnet, 2024/10/22, Interview with M. de Baar
6. *Medisch onderzoek krijgt boost met nieuwe microscoop uit Eindhoven*, Eindhovens Dagblad (ED), 2024/12/07, General coverage