Dr. Jordy Bouwman

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EDUCATION

Leiden University Leiden, the Netherlands
Ph.D., Natural Sciences / Astronomy October 2010
Thesis research with Prof. Dr. H.V.J. Linnartz titled: “Spectroscopy and Chemistry of Interstellar Ice Analogues”.

Free University Amsterdam Amsterdam, the Netherlands
M.Sc., Chemistry – Laser Sciences February 2006
Thesis title: “A new experimental setup for cavity ringdown spectroscopy on transient species”.

University of Applied Sciences Rijswijk Rijswijk, the Netherlands
B.Eng., cum laude, Applied Physics February 2004
Thesis title: “High-resolution infrared absorption spectroscopy on weakly bound ionic complexes”.

PERSONAL GRANTS

Netherlands Organisation for Scientific Research Leiden, the Netherlands
Vidi Research Grant May 2017
An €800.000 personal grant for conducting three years of independent research at Leiden University, Leiden, the Netherlands. Title of grant proposal: “Hydrocarbon chemistry under exotic conditions: the case of (exo)planetary atmospheres”

Netherlands Organisation for Scientific Research Nijmegen, the Netherlands
Veni Research Grant July 2013
A €250.000 personal grant for conducting three years of independent research at the free electron laser FELIX at Radboud University, Nijmegen, the Netherlands.

OTHER GRANTS

National Aeronautics and Space Administration Berkeley (CA), USA
NASA Planetary Atmospheres Program 2012
Successfully prepared and developed a $450.000 grant proposal to investigate chemical kinetics and reaction products of a number of radical-neutral reactions at Lawrence Berkeley National Laboratory.

RESEARCH EXPERIENCE

Universiteit Leiden Leiden, the Netherlands
Non-tenure-track Assistant Professor Nov. 2016 – Present

- Combined experimental and computational investigations to the influence of the shape and symmetry of polyaromatic species on the appearance of the interstellar aromatic infrared bands.
- Study the ionization, formation and photodissociation of gas-phase aromatic molecules. A better understanding of the formation and dissociation behavior of aromatics allows for a solid interpretation of the interstellar aromatic infrared emission bands and a better understanding of the formation of aromatic molecules in the interstellar medium and in combustion engines.
- Perform broadband cavity enhanced absorption (near UV – vis) and cavity ringdown (IR and optical) spectroscopic studies on transient species formed in a supersonic plasma expansion.

Radboud Universiteit, Nijmegen Nijmegen, the Netherlands
VENI Research Fellow Nov. 2013 – Oct. 2016

- On a personal research grant I designed and constructed an ion trap apparatus at the Free Electron Laser for Infrared Experiments (FELIX) to study the dissociative ionization of organic molecules.
- From measurements on the ion trap apparatus in conjunction with quantum chemical computations I found that 5 membered ring structures are dominant products from the dissociation of aromatic hydrocarbons. This finding sheds light on the PAH – fullerene interrelationship.
- Performed measurements at the VUV beamline of the Swiss Light Source to quantify the dissociative photoionization of nitrogen containing PAHs. Nitrogen containing PAHs are found to be less photostable and a larger entrance barrier is found for their formation compared with non-nitrogen containing PAHs.
- Studied radical-neutral reactions involving resonantly stabilized radicals that are critical in the formation polycyclic aromatic molecules in combustion relevant environments and the interstellar medium. From this synchrotron based research it is found that the allyl radical plays an important role in the formation of the first cyclic hydrocarbon.

University of California, Berkeley Berkeley, CA, USA
Postdoctoral Research Scientist Nov. 2010 – Nov. 2013

- Quantified bimolecular reaction rate constants and product branching ratios of low temperature radical-neutral reactions that are important in the atmosphere of Saturn's largest moon, Titan. From branching ratios measurements of C_2H reacting with unsaturated hydrocarbons at low temperature, I found that small products species are formed together with rather large radical fragments. This finding is contrary to assumptions that are made in chemical models that aim to predict atmospheric abundances in Titan's atmosphere and has radically changed our understanding of these fundamental reactions.
- Successfully wrote proposals for synchrotron time at the Chemical Dynamics Beamline at the Advanced Light Source at Lawrence Berkeley National Laboratory.
- Performed femtosecond pump-probe experiments on Rydberg states of noble gasses.

Leiden University Leiden, the Netherlands
Graduate Researcher Feb. 2006 – Oct. 2010

- Designed and constructed a new apparatus to measure rates of photoinduced processes of polycyclic aromatic hydrocarbons (PAHs) in cryogenic ices using near-UV/VIS direct absorption spectroscopy.

- Measured the photoprocessing rates of PAHs in cryogenic ices. From extrapolation of the laboratory measurements to the interstellar conditions I found that photoprocessing plays an important, but previously overlooked, role in the star forming regions.
- Performed pioneering mid-IR absorption spectroscopic measurements on photoprocessed PAH containing water ice to identify the classes of products. I found that product species are formed through processes such as O atom addition, OH radical addition, aromatic ring opening, and formation of aliphatic structures. These species make up a large fraction of the building blocks of planetary systems.

PEER REVIEWED PUBLICATIONS

1. **J. Bouwman**, H. Hrodmarsson, G. B. Elisson, A. Bodi, P. Hemberger, “Five Birds With One Stone: Photoelectron Photoion Coincidence Unveils Rich Phthalide Pyrolysis Chemistry”, Journal of Physical Chemistry A, Accepted, 2021
2. N. F. W. Ligterink, A. Ahmadi, A. Coutens, Ł. Tychoniec, H. Calcutt, E. F. van Dishoeck, H. Linnartz, J. K. Jørgensen, R. T. Garrod, **J. Bouwman**, “The prebiotic molecular inventory of Serpens SMM1 I. The isomers CH_3NCO and $HOCH_2CN$ as tracers of -CN and -NCO chemistry”, Astronomy and Astrophysics, 2021, in press
3. S. Panchagnula, **J. Bouwman**, D. B, Rap, P. Castellanos, A. Candian, C. Mackie, S. Banhatti, S. Brünken, H. Linnartz, A.G.G.M. Tielens “ Structural investigation of doubly-dehydrogenated pyrene cations ”, Physical Chemistry Chemical Physics, 22, 21651-21663, 2020
4. M.N. McCabe, P. Hemberger, E. Reusch, A. Bodi and **J. Bouwman** “ Off the Beaten Path: Almost Clean Formation of Indene from the ortho-Benzyne + Allyl Reaction ”, Journal of Physical Chemistry Letters, 11, 8, 2859–2863, 2020
5. **J. Bouwman**, C. Boersma, M. Bulak, J. Kamer, P Castellanos, A.G.G.M. Tielens, and H. Linnartz “Gas-phase IR spectroscopy of the rubicene cation ($C_{26}H_{14}^+$) – A case study for interstellar pentagons”, Astronomy and Astrophysics, 636, A57, 2020
6. M. Diedhiou, B.J. West, **J. Bouwman** and P.M. Mayer “Ion Dissociation Dynamics of 1,2,3,4-Tetrahydronaphthalene: Tetralin as a Test Case For Hydrogenated PAHs ”, Journal of Physical Chemistry A, 123, 51, 10885, 2019
7. X. L. Bacalla, H. Linnartz, N. L. J. Cox, J. Cami, E. Roueff, J. V. Smoker, A. Farhang, **J. Bouwman**, and D. Zhao “The EDIBLES survey IV. Cosmic ray ionization rates in diffuse clouds from near-ultraviolet observations of interstellar OH^+ ”, Astronomy and Astrophysics, 622, A31, 2019
8. **J. Bouwman**, P. Castellanos, M. Bulak, J. Terwisscha van Scheltinga, J. Cami, H. Linnartz and A.G.G.M. Tielens “The effect of molecular structure on the infrared signatures of astronomically relevant PAHs ”, Astronomy and Astrophysics, 621, A80, 2019
9. **J. Bouwman**, A. Bodi, and P. Hemberger “ Nitrogen matters: The Difference Between PANH and PAH Formation ”, Physical Chemistry Chemical Physics, 20, 29910-29917, 2018
10. **J. Bouwman**, S. Horst, and J. Oomens “ Spectroscopic characterization of the product ions formed by electron ionization of adamantane ”, ChemPhysChem, 19, 1-9, 2018
11. V. Kofman, M.J.A. Witlox, **J. Bouwman**, I.L. ten Kate, and H. Linnartz “ A multifunctional setup to record FTIR and UV-vis spectra of organic molecules and their photoproducts in astronomical ices ”, Review of Scientific Instruments, 89, 053111, 2018
12. A. Candian, **J. Bouwman**, P. Hemberger, A. Bodi, and A.G.G.M. Tielens “Dissociative ionisation of adamantane: a combined theoretical and experimental study ”, Physical Chemistry Chemical Physics, 20, 5399, 2018
13. J. Zhen, A. Candian, P. Castellanos, **J. Bouwman**, H. Linnartz, and A.G.G.M. Tielens “ Laboratory gas-phase infrared spectra of two astronomically relevant PAH cations: diindenoperylene, $C_{32}H_{16}^+$ and dicoronylene, $C_{48}H_{20}^+$ ”, Astrophysical Journal, 854, 1, 2018

14. S. Spieler, M. Kuhn, J. Postler, M. Simpson, R. Wester, P. Scheier, W. Ubachs, X. Bacalla, **J. Bouwman**, and H. Linnartz " C_{60}^+ and the Diffuse Interstellar Bands: An Independent Laboratory Check ", Astrophysical Journal, 846, 1682017, 2017
15. J. I. M. Pastoors, A. Bodi, P. Hemberger, **J. Bouwman**, "Dissociative ionization and thermal decomposition of cyclopentanone", Chemistry - A European Journal, 23, 13131 - 13140, 2017
16. K. D. Doney, D. Zhao, **J. Bouwman**, H. Linnartz, "The high-resolution infrared spectrum of the v3+v5 combination band of jet-cooled propyne", Chemical Physics Letters, 684, 351-356, 2017
17. J. Zhen, P. Castellanos, and **J. Bouwman**, H. linnartz, A. G. G. M. Tielens, "Infrared Spectra of Hexa-peri-hexabenzocoronene Cations: HBC^+ and HBC^{2+}", Astrophysical Journal, 836:28, 7pp, 2017
18. A. J. de Haas, J. Oomens, and **J. Bouwman**, "Facile pentagon formation in the dissociation of polyaromatics", Physical Chemistry Chemical Physics, 19, 2974-2980, 2017
19. J. Gao, **J. Bouwman**, G. Berden, and J. Oomens, "The Influence of Metal Ion Binding on the IR Spectra of Nitrogen-Containing PAHs", Journal of Physical Chemistry A, 120 (40), 7800–7809, 2016
20. **J. Bouwman,** A.J. de Haas, J. Oomens, "Spectroscopic evidence for the formation of pentalene$^+$ in the dissociative ionization of naphthalene", Chemical Communications, 52, 2636-2638, 2016
21. **J. Bouwman**, J. Oomens, A. Bodi, P. Hemberger, "On the formation of cyclopentadiene in the $C_3H_5 + C_2H_2$ reaction", Physical Chemistry Chemical Physics, 17, 20508–20514, 2015
22. **J. Bouwman**, B. Sztaray, J. Oomens, P. Hemberger, A. Bodi, "Dissociative Photoionization of Quinoline and Isoquinoline", Journal of Physical Chemistry A, *119* (7), 1127–1136, 2015
23. A. Cook, A. Ricca, A. L. Mattioda, **J. Bouwman**, J. Roser, H. Linnartz, J. Bergman, L.J. Allamandola "Photochemistry of Polycyclic Aromatic Hydrocarbons in Cosmic Water Ice: The Role of PAH Ionization and Concentration", Astrophysical Journal, 799, 14, 2015
24. **J. Bouwman**, M. Fournier, I. R. Sims, S. R. Leone, K. R. Wilson, "Reaction Rate and Isomer-Specific Product Branching Ratios of $C_2H + C_4H_8$: 1-Butene, cis-2-Butene, trans-2-Butene, and Isobutene at 79 K", Journal of Physical Chemistry A, 117, 5093, 2013
25. S. H. Cuylle, E. D. Tenenbaum, **J. Bouwman**, H. Linnartz and L. J. Allamandola, "Ly alpha-Induced Charge Effects of Polycyclic Aromatic Hydrocarbons Embedded in Ammonia and Ammonia:Water Ice", Monthly Notices of the Royal Astronomical Society, 423, 1825, 2012
26. **J. Bouwman**, F. Goulay, S. R. Leone, K. R. Wilson, "Bimolecular Rate Constant and Product Branching Ratio Measurements for the Reaction of C_2H with Ethene and Propene at 79 K", Journal of Physical Chemistry A, 116, 6091, 2012
27. F. Goulay, A. J. Trevitt, J. D. Savee, **J. Bouwman**, D. L. Osborn, C. A. Taatjes, K. R. Wilson, S. R. Leone, "Product Detection of the CH Radical Reaction with Acetaldehyde", Journal of Physical Chemistry A, 116, 6091, 2012
28. M. Steglich, **J. Bouwman**, F. Huisken, T. Henning, "Can Neutral and Ionized Polycyclic Aromatic Hydrocarbons Be Carriers of the Ultraviolet Extinction Bump and the Diffuse Interstellar Bands?", Astrophysical Journal, 742, 2, 2011
29. **J. Bouwman**, H. M. Cuppen, M. Steglich, L. J. Allamandola, H. Linnartz, "Photochemistry of Polycyclic Aromatic Hydrocarbons in Cosmic Water Ice II. Near UV/VIS Spectroscopy and Ionization Rates", Astronomy and Astrophysics, 529, A46, 2011
30. **J. Bouwman**, A. L. Mattioda, H. Linnartz, L. J. Allamandola, "Photochemistry of Polycyclic Aromatic Hydrocarbons in Cosmic Water Ice I. Mid-IR Spectroscopy and Photoproducts", Astronomy and Astrophysics, 525, A93, 2011
31. S. Bottinelli, A. C. A Boogert, **J. Bouwman**, M. Beckwith, E. F. van Dishoeck, K. I. Oberg, K. M. Pontoppidan, H. Linnartz, G. A. Blake, N. J. Evans, F. Lahuis, "The C2D Spitzer

Spectroscopic Survey of Ices around Low-Mass Young Stellar Objects. IV. NH_3 and CH_3OH", Astrophysical Journal, 718, 1100, 2010

32. **J. Bouwman**, H. M. Cuppen, A. Bakker, L. J. Allamandola, and H. Linnartz, "Photochemistry of the PAH Pyrene in Water Ice: the Case for Ion-Mediated Solid-State Astrochemistry", Astronomy and Astrophysics, 511, A33, 2010
33. **J. Bouwman**, D. M. Paardekooper, H. M. Cuppen, H. Linnartz, L. J. Allamandola, "Real-Time Optical Spectroscopy of Vacuum Ultraviolet Irradiated Pyrene:H_2O Interstellar Ice", Astrophysical Journal, 700, 56-62, 2009
34. **J. Bouwman**, W. Ludwig, Z. Awad, K. I. Oberg, G. W. Fuchs, E. F. van Dishoeck, H. Linnartz, "Band Profiles and Band Strengths in Mixed H_2O:CO Ices", Astronomy and Astrophysics, 476, 995, 2007
35. H. Verbraak, J. N. P. van Stralen, **J. Bouwman**, J. S. de Klerk, D. Verdes, H. Linnartz, F. M. J. Bickelhaupt, "High-Resolution Infrared Spectroscopy of the Charge-Transfer Complex $[Ar\text{-}N_2]^+$: A Combined Experimental/Theoretical Study", J. Chem. Phys. 123, 144305, 2005

CONFERENCE PROCEEDINGS

1. **J. Bouwman**, J. Kamer, P. Castellanos, M. Bulak, S. Panchagnula, J. Zhen, A.J. de Haas, J. Oomens, H. Linnartz, and A.G.G.M. Tielens, "Interstellar Polycyclic Aromatic Hydrocarbons: Spectroscopy, Photofragmentation and Photoproducts", IAU 350, Volume 15, 353-355, 2019
2. S. Panchagnula, **J. Bouwman**, J. Kamer, H. Linnartz and A.G.G.M. Tielens, "Photofragmentation of coronene cations", IAU 350, Volume 15, 402-403, 2019
3. M. Bulak, D. Paardekooper**, J. Bouwman**, G. Fedoseev and H. Linnartz "Towards disentangling photodesorption andphotodissociation in astronomicalice analogues", IAU 350, Volume 15, 422-424, 2019
4. **J. Bouwman** "Probing Molecular Dissociation using Large Scale Facilities; the Case of Astronomically Relevant Polyaromatics" in "XXIst Symposium on Atomic, Cluster and Surface Physics 2018," SASP 2018, 21
5. **J. Bouwman**, H. M. Cuppen, L. J. Allamandola and H. Linnartz, "VUV photochemistry of PAHs trapped in interstellar water ice" in "PAHs and the Universe: A Symposium to Celebrate the 25th Anniversary of the PAH Hypothesis," C. Joblin and A. G. G. M. Tielens (eds), EAS Publications Series, 46, 251-256 2011
6. H. Linnartz, J. B. Bossa, **J. Bouwman**, H. M. Cuppen, S. H. Cuylle, E. F. van Dishoeck, E. C. Fayolle, G. Fedoseev, G. W. Fuchs, S. Ioppolo, K. Isokoski, T. Lamberts, K. I. Oberg, C. Romanzin, E. Tenenbaum, J. Zhen in "Solid state pathways towards molecular complexity in space", IAU 280 (2011) p390

(INTER)NATIONAL COLLABORATIONS

- Dr. Lou Allamandola and dr. Christiaan Boersma, NASA Ames Research Center (2009 – present)
  IR and optical spectroscopy of interstellar PAHs, and application of the NASA Ames PAH database.
- Dr. Patrick Hemberger and dr. Andras Bodi at the Swiss Light Source, Villigen, Switzerland (multiple measurement campaigns from 2013 – present)
  Investigation of formation and dissociation of aromatic molecules using Vacuum Ultraviolet Radiation from the Swiss Light Source.
- Prof. Jos Oomens and dr. Sandra Brünken at the Free Electron Laser for Infrared Experiments (FELIX), Radboud University, Nijmegen, the Netherlands (multiple measurement campaigns from 2013 – present)

Isomer resolved investigation of fragments formed from the dissociative ionization of polyaromatic molecules.

- Prof. Harold Linnartz at Laboratory for Astrophysics, Leiden observatory, Leiden University (2013-present)
  Gas-phase cavity enhanced mid infrared and optical absorption spectroscopy of products formed in a plasma expansion.
  Guidance of Leiden Observatory PhD student Michał Bulak (H2020 EuroPAH network ESR) on the formation of Polyaromatic Hydrocarbons in interstellar ices.
- Prof. Xander Tielens and Harold Linnartz at Leiden observatory, Leiden University (2013-present)
  Guidance of Leiden Observatory PhD student Sanjana Panchagnula (H2020 EuroPAH network Early Stage Researcher) on studying the dissociation and spectroscopy of ionized aromatic hydrocarbons.
- Prof. Paul Mayer and dr. Brandi West, University of Ottawa (2018 – present)
  Dissociative ionization of hydrogenated polycyclic aromatic hydrocarbons
- Prof. Jan Cami, the University of Western Ontario (2018 – present)
  Diffuse interstellar band carriers and spectroscopy of interstellar PAHs

INVITED PRESENTATIONS

1. "Chemical Evolution of Interstellar Polycyclic Hydrocarbons" (*invited talk*) CHAINS Dutch Chemical Society Meeting, Veldhoven, the Netherlands, 2019
2. "Spectroscopy of Interstellar Hydrocarbons and their Photodissociation Products" (*invited talk*) Energetic Processing of large Molecules Meeting, Madrid, Spain, 2019
3. "Probing the Photodissociation of Interstellar Aromatic Hydrocarbons using Large-Scale Facilities" *(invited talk)* Photon Tools for Physical Chemistry, Beatenberg, Switzerland, 2019
4. "Photodissociation of Interstellar Aromatic Hydrocarbons" *(invited talk)* Dutch Astrochemistry Network Meeting, Radboud University, 2018
5. "Exotic Chemistry in Remote Environments - Photodissociation of Interstellar Aromatic Hydrocarbons" *(invited talk)* This week's discoveries talk, Leiden University, 2018
6. "Probing the Dissociation of Interstellar Polycyclic Aromatic Hydrocarbons using large-scale facilities" (*invited talk)* at SASP meeting, Obergurgl, Austria, 2018
7. "Photochemistry of PAHs" at the workshop on "the Past and Future of AstroPAH Research" (*invited talk*), Noordwijk, the Netherlands, 2016
8. "Photoprocessing of Polycyclic Aromatic Hydrocarbons" Physics at Veldhoven (*invited talk*), Veldhoven, the Netherlands, 2016
9. "Photoprocessing of Polycyclic Aromatic Hydrocarbons in the Gas Phase and Solids" Ices 2 PAHs meeting (*invited talk*), Annapolis, MD, USA, 2015

OTHER PRESENTATIONS

1. "Cosmochemical Cycle of Organic Matter", Astrochem Seminar, Leiden Observatory, Leiden University, the Netherlands, 2020
2. "Shining Light on the Aromatic Universe", van Marum colloquium, Chemistry Department at Leiden University, the Netherlands, 2019
3. "Identifying photodissociation products of polycyclic aromatic hydrocarbons", at "Celebrating the first 40 years of Xander Tielens' contribution to science", Avignon, France, 2019
4. "The Cosmochemical Cycle of Organic Matter", Lunch Seminar for Students organized by Leidsche Flesch, Leiden, the Netherlands, 2019
5. "Dissociation of Interstellar Polycyclic Aromatic Hydrocarbons", at the RSC/RAS "Astrochemistry for all" meeting, Sheffield, UK, 2018

6. “Dissociative Photoionization of Polycyclic Aromatic Hydrocarbons” Physics at Veldhoven, Veldhoven, the Netherlands 2017
7. “Science at Radboud University” at Korea University, Seoul, South Korea, May 2016
8. “Dissociative Photoionization of Polycyclic Aromatic Hydrocarbons” COST action meeting, Pisa, Italy, 2016
9. “Formation and Photodissociation of Complex Hydrocarbons” American Chemical Society, Denver, CO, USA, 2015
10. “Formation and Destruction of Hydrocarbons Elucidated with VUV (…and IR) Radiation” Astrochem Seminar, Universiteit Leiden, Leiden, the Netherlands, 2015
11. “Dissociative Ionization of Nitrogen Containing Polycyclic Aromatic Hydrocarbons” Workshop “Photodissociation in Astrochemistry”, Leiden, the Netherlands, 2015
12. “Dissociative Ionization of Nitrogen Containing Polycyclic Aromatic Hydrocarbons” NextGenChem Meeting, Eindhoven, the Netherlands, 2014
13. Colloquium at the Radboud Universiteit Nijmegen, the Netherlands, 2013
14. Seminar at the NASA Space Science & Astrobiology Division, Moffett Field, CA, USA, 2013
15. Seminar at the Division Geological & Planetary Sciences, Caltech, Pasadena, CA, USA, 2012
16. Seminar at Aerodyne Research Inc., Boston, MA, USA, 2012
17. Colloquium Chemistry Department U.C. Berkeley, Berkeley, CA, USA, 2012
18. Titan chemistry workshop, Miami, FL, USA, 2011
19. Leiden Observatory Colloquium, Universiteit Leiden, the Netherlands, 2010
20. European Conference on Surface Science, Groningen, the Netherlands, 2010
21. PAHs and the Universe, Toulouse, France, 2010
22. Seminar at NASA Ames Research Center, Moffett Field, CA, USA, 2009
23. Seminar at U.C. Berkeley, Berkeley, CA, USA, 2009
24. Dutch National Astronomy Conference, Kerkrade, the Netherlands, 2009
25. Molecular Spectroscopy Meeting, Columbus, OH, USA, 2009
26. NWO Chemical Sciences Meeting, Lunteren, the Netherlands, 2009
27. Interstellar Medium /Circumstellar Matter Meeting, Leiden, the Netherlands, 2008
28. Interstellar Medium /Circumstellar Matter Meeting, Leiden, the Netherlands, 2007

OTHER SCIENTIFIC & MANAGEMENT ACTIVITIES

- Member of the education committee for the astronomy bachelor program (2017-present)
- Member of scientific proposal review committees for NASA (2016 – present)
- Panel member for selecting PhD students at Leiden Observatory, 2018
- Chair for the American Chemical Society Astrochemistry subdivision session: “Organic inventory of the gas phase: from small molecules to PAHs”, Washington DC, 2017
- Measurements at the Advanced Light Source (synchrotron) at Lawrence Berkeley National Laboratory (multiple campaigns from 2010 – 2013)
- Measurements at the Swiss Light Source, Villigen, Switzerland (multiple measurement campaigns (from 2013 – present)
- Measurements at the Free Electron Laser for Infrared Experiments (FELIX), Radboud University, Nijmegen, the Netherlands (multiple measurement campaigns from 2013 – present)
- Successfully applied for computing time at the Dutch national computing facility SURFsara (2017 – present)
- Reviewed numerous publications for a variety of scientific journals, including MNRAS, Molecular Astrophysics, A&A, ApJ, ApJSS, Science Advances, JPCA and PCCP
- Scientific organizer and supervisor of a study trip to South-Korea (2016)

TEACHING EXPERIENCE

- **Instructor: "Astronomical Spectroscopy"** (Leiden University, 2018 – present)
  MSc level. Designed the course, planned and gave all lectures, wrote exams, graded exams and homework assignments, and assigned final grades. I received excellent evaluations from the students, with an average score of 8.7 on a scale of 0 – 10.
- **Instructor: "Molecular Physics"** (MSc level, Radboud University, 2014 – 2015)
  MSc level. Designed course material and presented lectures, wrote and graded exam and homework assignment. I received excellent evaluations for the course.
- **Instructor: "Honors Academy"** (Radboud University, 2013 – 2015)
  BSc level. Designed course material and presented lectures on "being a scientist" as an evening lecturer in an interdisciplinary program specifically aimed at the top 10% of the students.
- **Teaching assistant: "Introduction to Astronomy"** (Leiden University, 2008 – 2010)
  BSc level. Duties included grading homework assignments, lecturing computer classes, holding office hours for students.
- **Teaching assistant: "Crime Scene Investigation"** (VU Amsterdam 2005)
  High school level. Duties included guiding high school students in laboratory classes.

MENTORING EXPERIENCE

Postdoctoral researcher scientists
Nicolas Suas-David at Leiden University (May 2019 – present)
Primary supervisor of PhD students:
Morgan McCabe at Leiden University (May 2019 - present)
Co-supervisor of PhD students
Sanjana Panchagnula at Leiden University (September 2018 - present)
Michal Bulak at Leiden University (August 2018 – present)
Pablo Castellanos at Leiden University (2015 – 2018)
Juehan Gao at Radboud University (2014 – 2016)
Bachelor students research projects (number):

Radboud University	3	(Stijn Janssen, Stefan Horst, Femke Bangma)
Leiden University	4	(Jerry Kamer, Merel Donker, Pien Vinke, Jeger Broxterman)
UC Berkeley	1	(Nare Janvelyan)

Master student research projects (number):

Radboud University	2	(Arjen de Haas, Johan Pastoors)
Leiden University	2	(Irene Haasnoot, Judit Ferrer Asensio)

SKILLS AND TECHNIQUES

Spectroscopy:	Infrared multiphoton dissociation (action) spectroscopy, Fourier transform infrared spectroscopy, near-UV – mid-IR direct absorption spectroscopy, cavity ringdown spectroscopy, laser induced fluorescence, synchrotron photoionization spectroscopy, femtosecond pump-probe spectroscopy.
Mass spectrometry:	Time-of-flight and quadrupole (ion trap) mass spectrometry.
Software:	Windows, Mac, Linux, Microsoft Office, Endnote, LabVIEW, AutoCAD, Origin, Igor Pro, Maple, LaTeX, Gaussian09/Gaussian16 package.
Languages:	Dutch (native), English (full working proficiency), German (limited working proficiency)

REFERENCES

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