

# Catherine Walsh

## Curriculum Vitae

### Employment

- 09/16 - present **University Academic Fellow** *School of Physics and Astronomy, University of Leeds, Leeds, LS2 9JT, UK*
- 09/13 - 08/16 **NWO Veni Fellow** *Leiden Observatory, Leiden University, P.O. Box 9513, 2300 RA Leiden, The Netherlands*  
PI of research programme titled "From molecules to planets: exploring the chemical heritage of solar systems" (€250,000)
- 11/12 - 08/13 **Postdoctoral Research Fellow** *Leiden Observatory, Leiden University, P.O. Box 9513, 2300 RA Leiden, The Netherlands*  
Research area: ALMA studies of star and planet formation
- 11/09 - 11/12 **Postdoctoral Research Fellow** *Astrophysics Research Centre, School of Mathematics and Physics, Queen's University Belfast, Belfast BT7 1NN, UK*  
Research area: Astrochemistry of star and planet formation and exoplanetary atmospheres

### Education

- 09/06 - 05/10 **PhD in Astrophysics** *Astrophysics Research Centre, School of Mathematics and Physics, Queen's University Belfast, Belfast, UK, BT7 1NN*  
Thesis title: "The chemical structure of protoplanetary disks" (supervised by Professor T. J. Millar)
- 09/02 - 06/06 **MSci in Applied Mathematics and Physics (1st class honours: 88%)** *School of Mathematics and Physics, Queen's University Belfast, Belfast, UK, BT7 1NN*  
Thesis title: "A quantum mechanical model of water" (supervised by Professors A. T. Paxton and J. Kohanoff)

### Research Interests

I have a diverse range of interests with the overarching motivation to investigate the origin of chemical complexity in the local universe, from dark clouds, through protoplanetary disks, to planetary systems, and beyond.

- Astrochemistry: modelling fundamental chemical processes across the spectrum of interstellar and circumstellar molecular sources
- Chemistry and physico-chemical structure of protoplanetary disks
- Probing the connection between disks and (exo)planetary atmospheres
- ALMA observations of chemistry and dust structure in gas-rich protoplanetary disks
- Observing signatures of planet formation at high spatial resolution with ALMA
- Modelling chemical complexity and the origin of complex molecules
- Complex organic molecules in planet-forming disks and the link with prebiotic chemistry in planetary systems
- Interpretation and modelling of molecular observations from near-IR to sub(mm) wavelengths

One area which I would like to develop in the near future, is increased participation and organisation of outreach activities, especially in the encouragement of young people to pursue a career in STEM (Science, Technology, Engineering, and Mathematics).

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## Grants, Fellowships, Awards, and Prizes

- 2013 **NWO Veni Fellowship**  
Early career fellowship awarded by NWO (De Nederlandse Organisatie voor Wetenschappelijk Onderzoek) for a three-year research project titled "From molecules to planets: exploring the chemical heritage of solar systems" ( $\approx$  €250,000)
- 2011 **IAU280 "On to ALMA" Session Prize**  
Awarded by a judging panel for a 5 minute talk summarising a mock observing proposal for 10 hours of ALMA time
- 2009 **JSPS Short-term Fellowship**  
Awarded by the Japan Society for the Promotion of Science to work for one month at Kyoto University, Japan
- 2006 **Winner of the John Geddes Prize, 2006**  
Awarded by the School of Maths and Physics at Queen's University Belfast for the most lauded MSci research project

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## Observing Runs

- 08/2016 **Determining the chemical origin of gas-phase methanol in the TW Hya protoplanetary disk** *Atacama Large Millimeter Array (ALMA), Cycle 4, ranked "A"*  
Approximately 10 hours awarded (P.I. C. Walsh)
- 08/2016 **Chemical tracers of the protoplanet-carved gas gap at 50 AU in the disk around HD100546** *Atacama Large Millimeter Array (ALMA), Cycle 4, ranked "C"*  
Approximately 5.3 hours awarded (P.I. C. Walsh)
- 04/2014 **Probing the complex organic reservoir in protoplanetary disks** *Atacama Large Millimeter Array (ALMA), Cycle 2, ranked "B"*  
Approximately 6.6 hours awarded (P.I. C. Walsh)
- 09/2011 **Tracing the dust destruction zone in protoplanetary disks via SiO rotational line emission** *Atacama Large Millimeter Array (ALMA), Cycle 0, ranked "highest priority"*  
Approximately 4.5 hours awarded (P.I. C. Walsh)
- 05/2010 **A hydrocarbon chain survey in protostars and dense cloud cores** *Onsala 20m telescope*  
160 hours awarded (P.I. M. Cordiner), approximately 50% of which I observed  
I am Co-I of 17 additional ALMA observing programmes spanning Cycles 2, 3, and 4.

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## Publications

### Reviews

**Cuppen, H., Walsh, C., Lamberts., T., et al.** *Grain-surface models and data for astrochemistry*, 2017, Space Sci. Rev., in press

**Millar, T. J., Walsh, C., & Field, T.** *Negative ions in space*, 2017, Chem. Rev., 117, 1725

**Thrower, J., Ioppolo, S., & Walsh, C.** *Highlights from Faraday Discussion 168: Astrochemistry of Dust, Gas, and Ice*, 2014, Chem. Comm., 50, 13636

### First Author

**Walsh, C., Daley, C., Juhász, A., & Facchini, S.** *Non-Keplerian molecular gas motions within  $< 100$  au in the disk HD 100546 protoplanetary disk*, 2017, A&A, submitted

**Walsh, C., Juhász, A., Meeus, G., Dent, W. R. F., Millar, T. J., & Nomura, H.** *ALMA reveals the anatomy of the mm-sized dust and molecular gas in the HD 97048 disk*, 2016, ApJ, 831, 200

**Walsh, C., Loomis, R., Öberg, K. I., Kama, M., van 't Hoff, M. L. R., Millar, T. J., Aikawa, Y., Herbst, E., Widicus Weaver, S., & Nomura, H.** *First detection of gas-phase methanol in a protoplanetary disk*, 2016, ApJL, 823, L10

**Walsh, C., Nomura, H., & van Dishoeck, E. F.** *The molecular composition of the planet-forming regions of protoplanetary disks across the luminosity regime*, 2015, A&A, 582, A88

**Walsh, C., Juhász, A., Pinilla, P., Harsono, D., Mathews, G. S., Dent, W. R. F., Hogerheijde, M. R., Birnstiel, T., Meeus, G., Nomura, H., Aikawa, Y., Millar, T. J., & Sandell, G.** *ALMA hints at the presence of two companions in the disk around HD 100546*, 2014, ApJ, 791, L6

**Walsh, C., Millar, T. J., Nomura, H., Herbst, E., Widicus Weaver, S., Aikawa, Y., Laas, J. C., & Vasyunin, A.** *Complex organic molecules in protoplanetary disks*, 2014, A&A, 563, A33

**Walsh, C., Herbst, E., Nomura, H., Millar, T. J. & Widicus Weaver, S.** *Complex organic molecules along the accretion flow in isolated and externally irradiated protoplanetary disks*, 2014, Faraday Discussion, 168, 389

**Walsh, C., Nomura, H., & Millar, T. J.** *Molecular line emission from a protoplanetary disk irradiated externally by a nearby massive star*, 2013, ApJ, 766, L23

**Walsh, C., Nomura, H., Aikawa, Y. & Millar, T. J.** *Chemical processes in protoplanetary disks II: on the importance of photochemistry and X-ray ionisation*, 2012, ApJ, 747, 114

**Walsh, C., Millar, T. J. & Nomura, H.** *Chemical processes in protoplanetary disks*, 2010, ApJ, 722, 1607

**Walsh, C., Harada, N., Herbst, E. & Millar, T. J.** *The effects of molecular anions on the chemistry of dark clouds*, 2009, ApJ, 700, 752

#### *Joint Author*

**Booth, A., Walsh, C., Kama, M., Loomis, R. A., Maud, L. T., & Juhász, A.** *Sulphur monoxide exposes a potential molecular disk wind from the planet-hosting disk around HD 100546*, 2017, A&A, submitted

**Eistrup, C., Walsh, C., & van Dishoeck, E. F.** *Molecular abundances and C/O ratios in (exo)planet-forming material: chemistry in evolving disk midplanes*, 2017, A&A, submitted

**Penteado, E., Walsh, C., & Cuppen, H.** *Sensitivity analysis of grain surface chemistry to binding energies of ice species*, 2017, ApJ, in press

**Fedele, D., Carney, M., Hogerheijde, M. R., Walsh, C., Miotello, A., Klaassen, P., Bruderer, S., Henning, Th., & van Dishoeck, E. F.** *ALMA unveils rings and gaps in the protoplanetary system HD 169142*, 2017, A&A, 600, A72

**van 't Hoff, M. R., Walsh, C., Kama, M., Facchini, S., & van Dishoeck, E. F.** *Robustness of  $N_2H^+$  as tracer of the CO snowline*, 2017, A&A, 599, A101

**Notsu, S., Nomura, H., Ishimoto, D., Walsh, C., Honda, M., Hirota, T., & Millar, T. J.** *Candidate water vapor lines to locate the  $H_2O$  snowline through high-dispersion spectroscopic observations II. The case of a Herbig Ae star*, 2017, ApJ, 836, 118

- Palau, A., Walsh, C., Sánchez-Monge, Á., Girart, J. M., Cesaroni, R., Jiménez-Serra, I., Fuente, A., Zapata, L. A., & Neri, R. *Complex organic molecules tracing shocks along the outflow cavity in IRAS 20126+4104*, 2017, MNRAS, 467, 2723
- Furuya, K., Drozdovskaya, M. N., Visser, R., van Dishoeck, E. F., Walsh, C., Harsono, D., Hincelin, U., & Taquet, V. *Water delivery from cores to disks: deuteration as a probe of prestellar inheritance of H<sub>2</sub>O*, 2017, A&A, 599, A40
- Eistrup, C., Walsh, C., & van Dishoeck, E. F. *Setting the volatile composition of (exo)planet-building material: does chemical evolution in disk midplanes matter?*, 2016, A&A, 595, A83
- Taquet, V., Furuya, K., Walsh, C., & van Dishoeck, E. F. *A primordial origin for molecular oxygen in comets: a chemical kinetics study of the the formation and survival of O<sub>2</sub> from clouds to disks*, 2016, MNRAS, 462, S99
- Drozdovskaya, M. N., Walsh, C., van Dishoeck, E. F., Furuya, K., Marboeuf, U., Thiabaud, A., Harsono, D., & Visser, R. *Cometary ices in forming protoplanetary disc midplanes*, 2016, MNRAS, 462, 977
- Notsu, S., Nomura, H., Ishimoto, D., Walsh, C., Honda, M., Hirota, T., & Millar, T. J. *Candidate water vapor lines to locate the H<sub>2</sub>O snowline through high-dispersion spectroscopic observations I. The case of a T Tauri star*, 2016, ApJ, 827, 113
- Decin, L., Richards, A. M. S., Millar, T. J., Baudry, A., De Beck, E., Homan, W., Smith, N., Van de Sande, M., & Walsh, C. *ALMA-resolved salt emission traces the chemical footprint and inner wind morphology of VY CMa*, 2016, A&A, 592, A76
- Tsukagoshi, T., Nomura, H., Muto, T., Kawabe, R., Ishimoto, D., Kanagawa, K. D., Okuzumi, S., Ida, S., Walsh, C., & Millar, T. J. *A gap with a deficit of large grains in the protoplanetary disk around TW Hya*, 2016, ApJL, 829, L35
- Nomura, H., Tsukagoshi, T., Kawabe, R., Ishimoto, D., Okuzumi, S., Muto, T., Kanagawa, K. D., Ida, S., Walsh, C., Millar, T. J., & Bai, X.-N. *ALMA observations of a gap and a ring in the protoplanetary disk around TW Hya*, 2016, ApJL, 819, L7
- Li, X., Millar, T. J., Heays, A. N., Walsh, C., & van Dishoeck, E. F. *The chemistry and distribution of daughter species in the circumstellar envelopes of O-rich AGB stars*, 2015, A&A, 588, A4
- Bieler, A., Altwegg, K., Balsiger, H., Bar-Nun, A., Berthelier, J.-J., Bochsler, P., Briois, C., Calmonte, U., Combi, M., De Keyser, J., van Dishoeck, E. F., Fiethe, B., Fuselier, S. A., Gasc, S., Gombosi, T. I., Hansen, K. C., Hässig, M., Jäckel, A., Kopp, E., Korth, A., Le Roy, L., Mall, U., Maggioletti, R., Marty, B., Mousis, O., Owen, T., Rème, H., Rubin, M., Sémon, T., Tzou, C.-Y., Waite, J. H., Walsh, C., & Wurz, P. *Abundant molecular oxygen in the coma of comet 67P/Churyumov-Gerasimenko*, 2015, Nature, 526, 678
- Pinilla, P., Birnstiel, T., & Walsh, C. *Sequential planet formation in the HD 100546 protoplanetary disk?*, 2015, A&A, 580, A105
- Wright, C. M., Madison, S. T., Wilner, D. J., Burton, M. G., Lommen, D., van Dishoeck, E. F., Pinilla, P., Bourke, T. L., Menard, F., & Walsh, C. *Resolving structure of the disk around HD 100546 at 7 mm with ATCA*, 2015, MNRAS, 453, 414
- Drozdovskaya, M. N., Walsh, C., Visser, R., Harsono, D., & van Dishoeck, E. F. *The complex chemistry of outflow cavity walls exposed*, 2015, MNRAS, 451, 3836

- Murillo N. M., Bruderer, S., van Dishoeck, E. F., Walsh, C., Harsono, D., & Lai, S.-P. *A low-mass protostar's disk-envelope interface: disk-shadowing evidence from ALMA DCO<sup>+</sup> observations of VLA1623*, 2015, A&A, 579, A114
- Arasa, C., Koning, J., Kroes, G.-J., Walsh, C., & van Dishoeck, E. F. *Photodesorption of H<sub>2</sub>O, HDO, and D<sub>2</sub>O ice its impact on fractionation*, 2015, A&A, 575, A121
- Schmalzl, M., Visser, R., Walsh, C., Albertsson, T., Kristensen, L. .E., Mottram, J. C., & van Dishoeck, E. .F. *Water in low-mass star-forming regions with Herschel: the link between water gas and ice*, 2014, A&A, 572, A81
- Drozdovskaya, M. N., Walsh, C., Visser, R., Harsono, D., & van Dishoeck, E. F. *Methanol along the path from envelope to protoplanetary disc*, 2014, MNRAS, 445, 913
- Li, X., Millar, T. J., Walsh, C., Heays, A. N., & van Dishoeck, E. F. *Photodissociation and chemistry of N<sub>2</sub> in the circumstellar envelope of carbon-rich AGB stars*, 2014, A&A, 568, A111
- McElroy, D., Walsh, C., Markwick, A. J., Cordiner, M. A. Smith, K., & Millar, T. J. *The UMIST database for astrochemistry 2012*, 2013, A&A, 550, A36
- Woods, P. M., Walsh, C., Cordiner, M. A. & Kemper, F. *The chemistry of extragalactic carbon stars*, 2012, MNRAS, 426, 2689
- Heinzeller, D., Nomura, H., Walsh, C. & Millar, T. J. *Chemical evolution of protoplanetary disks: the effects of viscous accretion, turbulent mixing and disk winds*, 2011, ApJ, 731, 115
- Suutarinen, A., Geppert, W. D., Harju, J., Heikkilä, A., Hotzel, S., Juvela, M., Millar, T. J., Walsh, C. & Wouterloot, J. G. A. *CH abundance gradient in TMC-1*, 2011, A&A, 531, A121
- Cordiner, M. A., Charnley, S. B., Buckle, J. V., Walsh, C. & Millar, T. J. *Discovery of interstellar anions in Cepheus and Auriga*, 2011, ApJ, 730, L18
- Vigren, E., Hamberg, M., Zhaunerchyk, V., Kamińska, M., Thomas, R. D., Zhang, M., Kashperka, I., Ugglas, M. af, Walsh, C., Wester, R., Semaniak, J., Larsson, M. & Geppert, W. D. *Dissociative recombination of the acetaldehyde cation, CH<sub>3</sub>CHO<sup>+</sup>*, 2010, PCCP, 12, 11670
- Vigren, E., Hamberg, M., Zhaunerchyk, V. and, Kamińska, M., Semaniak, J., Larsson, M., Thomas, R. D., Ugglas, M. af, Kashperka, I., Millar, T. J., Walsh, C., Roberts, H., & Geppert, W. D. *Dissociative recombination of protonated formic acid: implications for molecular cloud and cometary chemistry*, 2010, ApJ, 709, 1429
- Vigren, E., Hamberg, M., Zhaunerchyk, V. and, Kamińska, M., Thomas, R. D., Larsson, M., Millar, T. J., Walsh, C. & Geppert, W. D. *The dissociative recombination of protonated acrylonitrile, CH<sub>2</sub>CHCNH<sup>+</sup>, with implications for the nitrile chemistry in dark molecular clouds and the upper atmosphere of Titan*, 2009, ApJ, 695, 317
- Kamińska, M., Vigren, E., Zhaunerchyk, V., Geppert, W. D., Roberts, H., Walsh, C., Millar, T. J., Danielsson, M., Hamberg, M., Thomas, R. D., Larsson, M., af Ugglas, M. & Semaniak, J. *Dissociative recombination of D<sub>3</sub>S<sup>+</sup>: product branching fractions and absolute cross sections*, 2008, ApJ, 681, 1717
- Millar, T. J., Walsh, C., Cordiner, M. A., Ní Chuimín, R. & Herbst, E. *Hydrocarbon anions in interstellar clouds and circumstellar envelopes*, 2007, ApJ, 662, L87

### *Published Conference Proceedings*

**Walsh, C.** *Chemical complexity in protoplanetary disks in the era of ALMA and Rosetta*, 2015, EAS, 75-76, 315

**Nomura, H., Walsh, C., Heinzeller, D., & Millar, T. J.** *Water in protoplanetary disks*, 2014, IAU, 293, 235

**Juanola-Parramon, R., Savini, G., Fenech, D., & Walsh, C.** *An end-to-end Far-infrared Interferometer Instrument Simulator (FIInS)*, 2014, in Proceedings of the SPIE, 9143

**Rimmer, P., Walsh, C. & Helling, C.** *Cosmic rays, UV photons, and haze formation in the upper atmospheres of hot Jupiters*, 2014, IAU, 299, 303

**Ishimoto, D., Nomura, H., Heinzeller, D., Walsh, C., Millar, T. J., & Saigo, K.** *The influence of disk winds on chemical evolution of protoplanetary disks*, 2013, ASPC, 476, 393

**Nomura, H., Walsh, C., Millar, T. J., & Aikawa, Y.** *Diagnosing gas dispersal processes in protoplanetary disks*, 2013, ASPC, 476, 209

**Nomura, H., Walsh, C., Heinzeller, D., & Millar, T. J.** *Hot core chemistry in young stellar objects: protoplanetary disks and outflows*, 2012, EAS, 52, 229

**Cordiner, M. A., Millar, T. J., Walsh, C., Herbst, E., Lis, D. C., Bell, T. A., & Roueff, E.** *Organic molecular anions in interstellar and circumstellar environments*, 2008, IAU, 251, 157

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### *Teaching Experience*

- 2016 - present **Lecturer** *University of Leeds*  
Level 3 module "Star and planet formation"
- 2016 - present **Tutor** *University of Leeds*  
Level 1 module "Physics I"
- 10/2015 **Lecturer** *Leiden Observatory*  
I was invited to deliver a lecture on the general topic of "Astrochemistry" as part of a BSc module titled "Modern Astronomical Research".
- 09/2014 **Lecturer** *Nordic Network of Astrobiology Summer School on "Exoplanets"*  
I was invited to lecture and to design and deliver a practical computer course on "Modelling of exoplanet atmospheres".
- 06/2013 **Lecturer** *Nordic Summer School on "Molecules in Space", Onsala*  
I was invited to lecture on the topic of "Exoplanet atmospheres".
- 06/2009 **Lecturer** *Nordic-NASA Astrobiology Summer School, Iceland*  
I was invited to lecture and to design and deliver a one-day practical computer course on "Model calculations of water formation in dark clouds".
- 2008 - 2009 **Level 1 Computational Physics Demonstrator** *Queen's University Belfast*  
I provided assistance to students on writing and executing computer programs written in C.
- 2007 - 2008 **Level 1 Laboratory Physics Demonstrator** *Queen's University Belfast*  
I provided assistance to level 1 students on performing and writing up laboratory experiments.

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### *Student Mentoring/Supervision*

- 2016 - present **PhD advisor of A. Booth** *University of Leeds*  
Thesis title: "Abundance and distribution of small volatiles in planet-forming disks".
- 2016 - 2017 **MPHYS advisor of H. McGee** *University of Leeds*  
Project title: "Climbing the ladder of complexity: complex organic molecules in disks with ALMA".

- 2016 **LEAPS supervisor of C. Daley** *Leiden Observatory*  
Project title: "Probing the kinematics of protoplanetary disks with ALMA observations".
- 2016 **LEAPS supervisor of S. Vissapragada** *Leiden Observatory*  
Project title: "Investigating complex organic molecule formation and survival in the planet-forming regions of protoplanetary disks".
- 2015 - 2016 **PhD (day-to-day) supervisor of M. R. van 't Hoff** *Leiden Observatory*  
Thesis title: "Chemistry in embedded disks: setting the stage for planet formation".
- 2014 - present **PhD co-promotor of C. Eistrup** *Leiden Observatory*  
Thesis title: "Disks to exoplanets: exploring the astrochemistry of planet formation".
- 2012 - 2016 **PhD co-promotor of M. R. Drozdovskaya** *Leiden Observatory*  
Thesis title: "Origin and distribution of complex organic molecules in protostars".
- 2012 - 2015 **PhD (day-to-day) supervisor of Dr. X. Li** *Leiden Observatory*  
Thesis title: "Molecules during stellar formation and death".
- 2014 **LEAPS Coordinator** *Leiden/ESA Astrophysics Programme for Summer Students*  
I was co-organiser of a 10-11 week summer research programme for undergraduate and MSc students held at Leiden Observatory. Duties included advertisement of the programme to both project supervisors and students, selection of candidates, and organisation of travel, accommodation, facilities, and activities for the duration of the programme. I, and my co-organiser, also adopted a pastoral role during the summer school.
- 2014 **LEAPS supervisor of A. Benge** *Leiden Observatory*  
Project title: "Molecular anions in photon-dominated regions".
- 2013 - 2014 **MSc co-supervisor of M. R. van 't Hoff** *Leiden Observatory*  
Thesis title: "Tracing the CO snow line in protoplanetary disks with ALMA".
- 2013 - 2014 **MSc co-supervisor of A. Bosman** *Leiden Observatory*  
Thesis title: "Cosmic-ray induced photodissociation".

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### *PhD Committees*

- 09/2016 **"Manuscript Committee" for E. Penteado** *Radboud Universiteit Nijmegen*  
These title: "Probing the chemistry of molecular clouds and young stellar objects: combining models with observational data".
- 06/2016 **"Opposition Committee" for Dr. D. Paardekooper** *Leiden Observatory*  
Thesis title: "Shining light on interstellar matter".
- 06/2015 **"Opposition Committee" for Dr. I. San José García** *Leiden Observatory*  
Thesis title: "Paving the path between low- and high-mass star formation".
- 05/2015 **"Opposition Committee" for Dr. T. Lamberts** *Leiden Observatory*  
Thesis title: "Unravelling the surface formation of regular and deuterated water in space".
- 02/2015 **"Opposition Committee" for Dr. X. Li** *Leiden Observatory*  
Thesis title: "Molecules during stellar formation and death".
- 12/2014 **"Opposition Committee" for Dr. G. Fedoseev** *Leiden Observatory*  
Thesis title: "Atom addition reactions in interstellar ice".

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### *Outreach, Conference Organisation, Press, and Other Activities*

- 10/2017 **10th World Conference of Science Journalists** *San Francisco, USA*  
Panel member for discussion session entitled "Astronomy's Next Big Things".
- 10/2017 **Soapbox Science** *University of Leeds in collaboration with STFC*  
I will present my work during this event at which female scientists directly address the public on soapboxes in high footfall areas.
- 07/2017 **Workshop** *Kamerlingh Onnes Building, Leiden*  
I am joint scientific organiser (with J. Tobin and D. Harsono) for a workshop on "Protoplanetary disk formation and evolution: setting the stage for planet formation".

- 05/2017 **Pint of Science** *University of Leeds*  
I am scheduled to give a talk during a public outreach event in local pubs in Leeds.
- 09/2016 **Press Release** *NAOJ*  
Release titled "ALMA Spots Possible Formation Site of Icy Giant Planet" and can be found here, <http://www.almaobservatory.org/en/press-room/press-releases/1015-alma-spots-possible-formation-site-of-icy-giant-planet>
- 06/2016 **Press Release** *ESO*  
Release titled "First Detection of Methyl Alcohol in a Planet-Forming Disc" and can be found here, <http://www.eso.org/public/usa/news/eso1619/>
- 2013 - 2015 **Astrochem Seminar Organiser** *Leiden Observatory*  
For 2.5 years I was organiser of the Astrochem Seminar series at Leiden Observatory. This involved canvassing for speakers (both internal and external), bookings rooms, and promotion (via e-mail alerts and an online calendar).
- 11/2015 **Press Interview** *Leidsch Dagblad and de Volkskrant*  
I was interviewed for two newspaper articles on the detection of molecular oxygen in comet 67P/Churyumov-Gerasimenko, the latter of which can be found here <http://www.volkskrant.nl/wetenschap/rosetta-komeet-ademt-zuurstof-uit-a4172877/>.
- 07/2014 **Lorentz Centre Workshop** *Lorentz Centre*  
I was a scientific organiser for the Lorentz Centre workshop "Grain-surface networks and data for astrochemistry".
- 03/2014 **Press Interview** *NASA Astrobiology Magazine*  
I was interviewed for an online article on my recent publication on "Complex organic molecules in protoplanetary disks" which can be found here: <http://www.astrobio.net/news-exclusive/a-stars-early-chemistry-shapes-life-friendly-atmospheres>.
- 01/2012 **Jupiter Watch** *Queen's University Belfast in participation with BBC's Stargazing Live*  
I supervised a public event in collaboration with the Irish Astronomical Association, which invited members of the public to observe Jupiter and its moons.
- 11/2011 **Lab Coats and Lace** *Queen's University Belfast in collaboration with WITS (Women in Technology and Science)*  
I gave a presentation on my experience as a woman working in science and participated in a Q&A session for secondary-level students interested in pursuing a career in science or technology.

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### *Referee/TAC Experience/Committees*

- 2017 - present **UK-SKA(Square Kilometer Array) Science Committee member**
- 2016 - present **ALMA Proposal Review panel member**
- Nature Astronomy**
- The Astrophysical Journal**
- The Astrophysical Journal Letters**
- Astronomy & Astrophysics**
- NASA grants review panel member**

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### *Invited Presentations*

#### *Upcoming*

- 06/2017 **EWASS: Science with ALMA** *Prague, Czech Republic*
- 07/2017 **Kavli ExoFrontiers 2017 Symposium** *University of Cambridge, UK*
- 08/2017 **254th ACS National Meeting: Molecules in Space - Linking the interstellar medium to (exo)planets** *Washington D. C., USA*



TBD/2018 **IAU General Assembly (pending)** *Vienna, Austria*

*Previous*

- 06/2017 **230th AAS Meeting: Laboratory Astrophysics Division** *Austin, USA*
- 05/2017 **Invited seminar** *Liverpool John Moores University, UK*
- 05/2017 **Invited seminar** *University of Cambridge, UK*
- 04/2017 **Atmospheres of Disks and Planets: Chemistry, Dynamics, and Observations** *Ringberg Castle, Germany*
- 01/2017 **Invited seminar** *Queen Mary University London, UK*
- 12/2016 **From Qualitative to Quantitative: Exploring the Early Solar System by Connecting Comet Composition and Protoplanetary Disk Models** *International Space Science Institute, Bern, Switzerland*
- 11/2016 **Invited seminar** *University of Leicester, UK*
- 10/2016 **Missing Links from Disks to Planets: Konkoly/MPIA workshop 2016** *Budapest, Hungary*
- 10/2016 **Ice Age - The Era of the James Webb Space Telescope** *Lorentz Centre workshop, Leiden, The Netherlands*
- 05/2016 **Astrochemistry on Small Scales** *Manchester, UK*
- 05/2016 **Invited seminar** *Max Planck Institute for Solar System Research, Germany*
- 04/2016 **From Star and Planet Formation to Early Life** *Vilnius, Lithuania*
- 03/2016 **Invited seminar** *DIAS, Ireland*
- 03/2016 **Protoplanetary Discussions** *Edinburgh, UK*
- 02/2016 **Invited seminar** *University of Cambridge, UK*
- 01/2016 **Rosetta/ROSINA Col meeting** *Gruyères, Switzerland*
- 01/2016 **Astrochemistry as a Diagnostic of Star and Planet Formation** *Bordeaux Observatory, France*
- 11/2015 **Invited seminar** *Harvard University, USA*
- 10/2015 **From Clouds to Protoplanetary Disks: the astrochemical link** *Berlin, Germany*
- 09/2015 **The 6th Zermatt ISM Symposium: Conditions and Impact of Star Formation: from Lab to Space** *Zermatt, Switzerland*
- 08/2015 **Goldschmidt2015** *Prague, Czech Republic*
- 03/2015 **Icy Grain Chemistry for Formation of Complex Organic Molecules: From Molecular Clouds to Protoplanetary Disks, Comets and Meteorites** *Tokyo, Japan*
- 01/2015 **Invited seminar** *KU Leuven, Belgium*
- 01/2015 **Chemical Diagnostics of Star and Planet Formation with Cycle 3 ALMA** *MPE/MPIA, Garching, Germany*
- 10/2014 **Exoplanets Summer School** *La Palma, Spain*
- 08/2014 **40th COSPAR Scientific Assembly: It's a Dusty Universe** *Moscow, Russia*
- 07/2014 **Lorentz Centre Workshop: Grain-surface Networks and Databases for Astrochemistry** *Leiden University, The Netherlands*
- 05/2014 **Invited seminar** *University of Bern, Switzerland*
- 04/2014 **Faraday Discussion FD168** *Leiden, The Netherlands*
- 03/2014 **247th ACS National Meeting: Chemistry in the interstellar medium - new frontiers in laboratory, theory, and observations** *Dallas, USA*

- 11/2013 **Leiden University Science Faculty “Discovery” Series** *Leiden University, The Netherlands*
- 10/2013 **Invited seminar** *Radboud University, Nijmegen, The Netherlands*
- 09/2013 **Sterrewacht Science Day 2013** *Leiden Observatory, The Netherlands*
- 07/2013 **Molecules in Space: Nordic-NASA Workshop on Astrobiology** *Onsala, Sweden*
- 06/2013 **222nd AAS Meeting: Laboratory Astrophysics Division** *Indianapolis, USA*
- 10/2012 **Molecular Spectroscopy in the Era of Far-IR Astronomy** *Emory University, Atlanta, USA*
- 09/2012 **Invited seminar** *St. Andrew’s University, UK*
- 06/2012 **The Hot and Warm Universe: Astrochemistry at intermediate and high temperatures** *Tallinn, Estonia*
- 05/2012 **International Workshop on Protoplanetary Disks** *Kyoto University, Japan*
- 02/2012 **Invited seminar** *Leiden Observatory, The Netherlands*

## Conferences

### Oral Contributions

- 32/2017 **IAUS 332: Astrochemistry VII** *Puerto Varas, Chile*
- 02/2015 **Photodissociation in Astrochemistry Workshop** *Oegstgeest, The Netherlands*
- 11/2013 **NOVA Network II Meeting** *University of Amsterdam, The Netherlands*
- 09/2013 **Dutch Astrochemistry Network Meeting: gas-phase group** *Leiden Observatory, The Netherlands*
- 01/2013 **Dust, Gas, and Astrochemistry** *Queen’s University Belfast, UK*
- 01/2012 **Large Molecules in Space** *Nottingham University, UK*
- 09/2011 **Lorentz Centre Workshop: Challenges in Modelling the Reaction Chemistry of Interstellar Dust** *Lorentz Centre, Leiden University, The Netherlands*
- 06/2011 **IAU 280: The Molecular Universe** *Toledo, Spain*
- 01/2011 **Exploring Connections with Plasma Chemistry** *Eindhoven University of Technology, The Netherlands*
- 09/2010 **The Transient Universe: From exoplanets to hypernovae** *Royal Irish Academy, Dublin, Republic of Ireland*
- 03/2010 **Submillimeter and THz Astrochemistry** *University of Tokyo, Japan*
- 01/2010 **Astrochemistry at High Resolution** *University of Manchester, UK*
- 03/2009 **Chemical Diagnostics of Star and Planet Formation** *University of Tokyo, Japan*
- 09/2007 **Young Researchers Meeting in Astrochemistry** *Cardiff University, UK*

### Poster Contributions

- 09/2015 **The 6th Zermatt ISM Symposium: Conditions and Impact of Star Formation: from Lab to Space** *Zermatt, Switzerland*
- 07/2013 **Protostars & Planets VI** *Heidelberg, Germany*
- 06/2010 **Faraday Discussion 147: Chemistry of the planets** *Saint Jacut de la Mer, France*
- 06/2009 **Anions - from the Lab to the Stars** *Bad Honnef, Germany*
- 01/2009 **Computational Astrochemistry** *University College London, UK*
- 03/2008 **National Astronomy Meeting** *Queen’s University Belfast, UK*

- 03/2008 **High Temperature Astrochemistry** *NUI Galway, Ireland*
- 01/2007 **Dust, Gas and Chemistry in Space** *Queen's University Belfast, UK*  
*Attended*
- 09/2010 **ExoClimes: Exploring the diversity of planetary atmospheres** *Exeter, UK*
- 08/2009 **42<sup>nd</sup> IUPAC Congress: Chemistry solutions** *Glasgow, UK*
- 09/2008 **Molecular Universe FP6: Final network meeting** *Boppard, Germany*
- 06/2007 **New Astronomical Challenges for Surface Science** *Heriot Watt University, UK*
- 05/2007 **Molecules in Space and the Laboratory** *Paris, France*
- 09/2006 **Young Researchers Meeting in Astrochemistry** *University College London, UK*