CV of Prof. Nadia Balucani

https://www.unipg.it/personale/nadia.balucani
https://nadiabalucani.weebly.com/

Prof. Nadia Balucani
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Born on xxxxx 1965; Married, one daughter

EDUCATION

1993: PhD in Physical Chemistry, University of Perugia

1989: Laurea in Chemistry, University of Perugia (Magna cum Laude)

PROFESSIONAL POSITIONS

- 2018-present: Full Professor, University of Perugia

- 2018-22: Affiliated scientist of the Institut de Planétologie et d'Astrophysique de Grenoble, Université Grenoble Alpes; formal role: expert of gas-phase chemistry for the ERC-AdG project DOC (PI: C Ceccarelli)

- 2015-2016; 2019-present: Associate Member of INAF Osservatorio di Arcetri

- 2016-2021: Teaching Director of Undergraduate and Master Studies in Chemistry (Presidente del corso di Laurea in Chimica e LM in Scienze Chimiche)

- 2004-2018: Associate Professor, University of Perugia

- 1993-2003: Associate Researcher, University of Perugia

- 1994/1995: Postdoc (CNR fellowship) with Prof RJ Saykally, University of California Berkeley, USA

- 2009-present: Member of the Doctorate School (6 PhD students supervised in the last 5 years)

- 2013: National qualification for the position of Full Professor (ASN 2012) by three panels (03/A2, 03/B1, 03/B2)

SCIENTIFIC APPOINTMENTS

- 2021-present: Member of the Committee for the National Scientific Qualification to function as associate or full professor in Italian Universities (Settore Concorsuale 03/B1).

- 2015-16: Member of Gruppo Esperti Valutatori GEV-VQR 2011-14 (ANVUR), Scienze Chimiche

- Professeur Invité in France: 2019 Université Grenoble Alpes; 2015 Université Grenoble Alpes; 2013 Université J Fourier, Grenoble; 2013 Université de Rennes; 2007 Université de Rennes; 2002 Université Bordeaux (Maitre de Conference)

- Visiting Professor: 2012 Universidad del Pais Vasco, E; 2012 University of Hawaii at Manoa, USA; 2009 Universidade de Brasilia, Brazil

- Visiting Scientist: 2000 Universitat Stuttgart, D; 2000 Universidad Complutense Madrid, E; 1999 Institute of Atomic and Molecular Sciences, Taiwan

- Erasmus Professor: Universidad del Pais Vasco, E (2017, 2016, 2015, 2011); Université de Bordeaux, F (2014); Universidad de Salamanca, E (2013)

- 2015-20: Member (substitute) of the Management Committee of the European COST Action CM1404: Chemistry of Smart Energy Carriers and Technologies (also Local Team Leader)

- 2014-19: Member of the Management Committee of the European COST Action CM1401: Our AstroChemical History (also Local Team Leader; Nov 14 – Jun 16 chair of the WG1 Gas Phase Chemistry & Core Group Member)

- 2010-14: Member of the Management Committee of the European COST Action CM0901: Detailed chemical kinetic models for cleaner combustion (also Local Team Leader)

- 2009-13: Member (substitute) of the Management Committee of the European COST Action CM0805: The Chemical Cosmos: Understanding Chemistry in Astronomical Environments (also Local Team Leader)

- 2016 - present: Member of SOLEIL Synchrotron Peer Review Committee 1 «Diluted Matter»

- 2012-17: Member of the Scientific Committee of the Italian Astrobiology Society

- 2018 – present: Member of the Executive Committee of the Italian Astrobiology Society

- 2015-18: Member of the Italian Space Agency (ASI) panel of experts for Astrobiology

- 2014-18: KIDA (KInetic Database for Astrochemistry) expert for neutral-neutral reactions in astrochemistry

- 2016 - present: Member of the International Advisory Committee of the International Symposium on Molecular Beams

- 2020- present: Rotator Member of the Int. Committee of the International Symposium on Free Radicals

- 2014-16: Member of the Editorial Advisory Board of the International Journal of Chemical Kinetics

- 2016: Guest Editor of the J Phys Chem A special issue dedicated to Prof. P Casavecchia & A Laganà

- Referee of International Journals: Phys Chem Chem Phys, J Phys Chem A, Chem Phys, Chem Phys Lett, J Chem Phys, Chem Soc Rev, Int Rev Phys Chem, Nature Chemistry, Journal of Organic Chemistry, New Journal of Chemistry, ChemComm, Rapid Commun Mass Spectrometry, Eur Phys J D, Energy, Planet Space Science, Astrobiology, Icarus, Molecular Astrophys, Astrophysical Journal, Nature Astronomy, MNRAS, Astronomy and Astrophysics, JACS.

- Reviewer of Scientific Proposals for the funding Agencies: Department of Energy USA, French ANR, NASA USA, Czech Science Foundation, Netherlands Organization for Scientific Research (Chemical Sciences), SIRMIUR, The Israel Science Foundation, ERC Consolidator Grant

BIBLIOMETRICS

The results of her research are documented by >240 scientific publications, of which >200 published in well-renowned international journals with high impact factor (including Science, Nature, JACS, Phys Rev Lett, PNAS). Her publications have received more than 7000 citations on ISI WoS (Aug 2022) and 8700 on GoogleScholar (Aug 2022), H-index=53 on ISI WoS (Feb 2022) and 57 on GoogleScholar (Aug 2022). She has written several book chapters and contributions for collective volumes, including the Encyclopedia of Astrobiology. Included in the Top Italian Scientists list http://www.topitalianscientists.org) since 2011 and in the top 2% of all scientists as classified by Ioannidis et al. DOI: 10.17632/btchxktzyw.1

National and international grants (PI – last 5 years)

• National PI and of the Perugia unit for the project PRIN2020 Beyond-2p (Astrochemistry beyond the second period elements) - 2020AFB3FX, 36 months, ERC PE4

• PI of the Perugia unit of the H2020-MSCA-ITN-2018 "AstroChemical Origins"

• PI of the Perugia unit of the "Origine, presenza, persistenza della vita nello spazio, dalle molecole agli estremofili" - Bando ASI DC-YUM-2A17-034

• PI of the AMIS Excellence Laboratory "Molecular Processes in Combustion, MPC" (dedicated budget: 390 k€)

• Member of the Management Committee and of the team who submitted the project "AMIS - Un Approccio Molecolare per la Sostenibilità" - MIUR call "Dipartimenti di Eccellenza" the project was financed with 8600 k€ for the period 2018-2022 (5 y)

• PI of the Perugia unit of the project PRIN2015 STARS in the CAOS - 2015F59J3R_002, 36 months, ERC PE4

SCIENTIFIC COLLABORATIONS

During her career, she has collaborated with theoretical reaction dynamics groups (JM Bowman, Emory University, USA; DG Truhlar, University of Minnesota, USA; GC Schatz, Northwestern University, USA; DC Clary, Oxford University, UK; MH Alexander, University of Maryland, USA; H Guo, University of New Mexico, USA; H-J Werner, Universitat Stuttgart, D; J-M Launay, Universite de Rennes 1, F; FJ Aoiz, L Banares, Universidad Complutense, Madrid, E), with other experimental groups in reaction dynamics (RI Kaiser, University of Hawaii, USA; TK Minton, Montana State University, USA; M Costes, Universite Bordeaux, F) and chemical kinetics (IR Sims, Université de Rennes 1, F; A Bergeat, K Hickson, Universite Bordeaux I, F).

More recently, she has started collaborations with astrophysicists (S Viti, UCL, UK; C Ceccarelli, IPAG, F; C Codella, Osservatorio di Arcetri), planetary scientists (V Vuitton, IPAG, F) and with P Ugliengo (Univ Turin) & A Rimola (Autonoma Barcelona, E).

AWARDS AND MEMBERSHIPS

- 2001 XIII Premio Nazionale Federchimica per un Futuro Intelligente

- Member of Italian Chemical Society, International Society for the Study on the Origin of Life, American Chemical Society; Royal Society of Chemistry, Italian Astrobiology Society.

- From 2022: Member of the International Astronomical Union and of COSPAR (Committee on Space Research)

- 2007-2012 Member of the Regional SCI Committee (Direttivo Sezione Umbria)

CONFERENCES ATTENDED

Her scientific reputation is witnessed by 53 invited talks worldwide (including prestigious conferences such as Pacifichem, Gordon Conference, IAU General Assembly, 3 ACS National Meetings, Collision Dynamics Meeting, ISSOL Meeting, COSPAR General Assembly) and 44 contributed talks. She participated in the Nobel Symposium on Cosmochemistry (2006) upon invitation. She has presented 21 Invited Seminars upon invitation in national and international Universities/Research Inst.

CONFERENCE ORGANIZATION

- Chairperson: Co-Organizer (with RI Kaiser) of the Inaugural Astrochemistry Symposium, 246th ACS National Meeting (Indianapolis, 2013); 4th Annual Meeting of the COST Action CM0901 Detailed Chemical Kinetic Models for Cleaner Combustion (Perugia, 2013); The role of oxygen in planetary systems (Perugia, 2012); From astrophysics to astrochemistry towards astrobiology – IV Workshop of the Italian Astrobiology Society (Perugia, 2012)

- SOC Member: First General Meeting of the COST Action CM1401 Our Astrochemical History (Prague, Czech Rep, 2015); CHITEL 2015 (Turin, 2015); Life in a Cosmic Context – V Workshop of the Italian Astrobiology Society (Trieste, 2015); Complex organic molecules in space: gas-phase routes and isotopic enrichment – I meeting WG1-4 COST Action CM1401 (Pisa, 2016); Summer School Astrochemistry: From Space To Earth (Grenoble, 2016); XVII International Conference on Science, Arts and Culture Sailing through the Wonders of Astrobiology (Veli Lošinj, Croatia, 2017); Astrochemical Conference KIDA (Bordeaux, 2017); Computational Astrochemistry Workshop @ ICCSA2018 (Melbourne, Australia, 2018); Conference on Combustion Physics and Chemistry (Samara, Russia, 2018); Computational Astrochemistry Workshop @ ICCSA2019 (St. Petersburg, Russia, 2019).

- LOC Member of 9 international/national conferences

SCIENTIFIC ACTIVITY

Her main field of expertise is gas-phase chemistry. In the first part of her career, NB was mainly involved in crossed molecular beam (CMB) studies of the reaction dynamics of simple systems of interest from a fundamental point of view. The possibility of comparing detailed experimental results with state-of-the-art dynamical calculations performed by various groups led to the publications of papers with numerous citations. During her stay in Berkeley, she has worked on IR emission spectroscopy of polycyclic aromatic hydrocarbons. Once returned to Perugia, she has applied the CMB technique to the study of systems of interest in astrochemistry, atmospheric chemistry, combustion chemistry. In recent years, her main research interests have focused on astrochemistry and prebiotic chemistry.

Perugia, August 23, 2022

Next pages: list of invited talks and list of publications to date

Invited talks/lectures (conferences/workshops/schools) (as of Aug, 23, 2022)

53. *From Clouds to Planets II: The Astrochemical Link*, to be held on 3-7 October 2022, Harnack Haus, Berlin (Germany).

52. MD-GAS (Molecular dynamics in the gas phase: experimental tools and methods) Training School, July 12-15, 2022, Trieste (Italy). Title: Applications to Astrochemistry.

51. 36th International Symposium on Free Radicals, July 3-8, 2022, Stockholm (Sweden). Title: Combined experimental and theoretical investigation of reactions involving atomic/diatomic radicals and leading to N-containing organic molecules in extraterrestrial environments

50. *THE INTERNATIONAL CHEMICAL CONGRESS OF PACIFIC BASIN SOCIETIES 2021*, Honolulu, Hawaii (USA), *Symposium: Misconceptions in Astrochemistry: A Chemist's Guide* – December 16 - 21, 2021 | Virtual. Title: Gas-phase chemistry in the interstellar medium: there is still much to learn

49. ECLA2020 - *European Conference on Laboratory Astrophysics*, September 26 – October 1, 2021, Anacapri (Italy). Title: Gas phase chemistry leading to interstellar complex organic molecules: there is still much to learn

48. *Chemical Processes in Solar-type Star-Forming Regions*, September 13-17, 2021, Torino (Italy). Title: Gas-phase chemistry in the interstellar medium: there is still much to learn

47. *Elucidating the Interstellar and Circumstellar Chemistry of Silicon Symposium @ Fall 2021 National* Meeting of the American Chemical Society (ACS), August 22-26, 2021, Atlanta (USA). Title: SiS detection and formation/destruction routes in shocked low-mass star-forming regions

46. *Second School of ITN Astro-Chemical Origins (ACO)*, 12-16 July 2021, Padua (Italy). Title: Laboratory experiments for astrochemists

45. *COSPAR 2020, F3.5: "Pre-biotic and complex molecules in the universe: Observational, laboratory and computational perspectives on the evolution of molecular complexity"*. January 28 – February 4, 2021, Sydney (Australia). Title: Deuterium enrichment of interstellar complex organic molecules in gas-phase chemistry.

44. *First Year School of ITN Astro-Chemical Origins (ACO)*, 2-20 December 2019, Perugia (Italy). Title: Laboratory experiments for astrochemistry: neutral-neutral reactions.

43. *The Physics and Chemistry of the Interstellar Medium – Celebrating the first 40 years of Alexander Tielens' contribution to science* – 2-6 September 2019, Avignon (France). Title: Gas-phase chemistry in the interstellar medium: there is still much to learn (Review Talk)

42. *French-Mexican Advanced School on the Origins and Evolution of Life 2019,* 1-5 July 2019, Paris (France). Title: The role of gas-phase reactions in prebiotic chemistry

41. *Atomistic simulations in prebiotic chemistry – a dialog between experiment and theory* (CECAM workshop), 1-5 July 2019, Paris (France). Title: The role of gas-phase reactions in prebiotic chemistry

40. *New Quests in Stellar Astrophysics IV - Astrochemistry, Astrobiology and the Origin of Life*, Puerto Vallarta (Mexico), March 31 - April 5, 2019. Title: Gas-phase chemistry and molecular complexity in space: how far do they go?

39. *International Conference on Combustion Physics and Chemistry*, Samara (Russia), July 24-28, 2018 *(cancelled for personal problems)*. Title: Reactions of oxygen atoms with aliphatic and aromatic hydrocarbons by crossed beam experiments

38. *European Week of Astronomy and Space Science (EWASS 2018), Special Session 5: Complex organic molecules in the Universe: current understanding and perspectives,* Liverpool (UK), April 3-6, 2018. Title: Gas-phase formation routes of interstellar complex organic molecules

37. *Prebiotic Molecules in Space and Origins of Life on Earth*, Bad Honnef (Germany), March 19-23, 2018. Title: Gas phase chemistry and molecular complexity: how far do they go?

36. *XXI Symposium on Atomic, Cluster and Surface Physics (SASP2018)*, Universitätszentrum Obergurgl (Austria), February 15, 2018. Title: Reactions of oxygen and nitrogen atoms with aliphatic and aromatic hydrocarbons by crossed beam experiments

35. *WG1/WG2 workshops of the COST Action CM1401 Our Astro-Chemical History*, Ciudad Real (Spain), December 11-13, 2017 *(cancelled for personal problems)*. Title: The role of atomic oxygen chemistry in the interstellar medium

34. *XXIV International Symposium on Free Radicals (ISFR2017),* Hayama (Japan), August 28 - September 1, 2017. Title: Reactions of atomic radicals with aliphatic and aromatic hydrocarbons by crossed beam experiments

33. Workshop "*Esobiologia ed ambienti estremi: dalla chimica delle molecole alla biologia degli estremofili*", Sede ASI, Roma, December 13, 2016. Title: Chimica prebiotica in fase gassosa

32. *252nd National Meeting, Symposium on Frontiers of Solar System Chemistry: Planets to Comets and Beyond* (Astrochemistry Subdivision), Philadelphia (USA), August 21-25, 2016. Title: Neutral gas-phase chemistry in upper planetary atmospheres

31. *41st COSPAR Scientific Assembly*, Istanbul (Turkey), 30 July - 7 August 2016 *(the meeting was cancelled).* Title: Gas phase chemistry and molecular complexity: how far do they go?

30. *XXIII European Conference on Atomic and Molecular Physics of Ionized Gas*, Bratislava (Slovakia), July 12-16, 2016. Title: The reactions of atomic oxygen with alkenes and alkynes: primary products, branching ratios and role of intersystem crossing

29. *GoCAS Workshop "Origins of Habitable Planets"*, Goteborg (Sweden), May 16-20, 2016. Title of the first talk: Gas phase chemistry in the interstellar medium. Title of the second talk: Experimental methods to investigate the chemistry of the interstellar medium: highs and lows

28. *From Star and Planet Formation to Early Life*, Vilnius (Lithuania), April 25-28, 2016. Title: Gas phase chemistry and molecular complexity: how far do they go?

27. *1st Italian Workshop on Astrochemistry - Astronomical Complex Organic Molecules in Different Environments*, Palazzo Strozzi, Firenze, March 10-11, 2016. Title: Gas-phase formation routes of complex organic molecules in the interstellar medium

26. *Colloquium on kinetics and scattering theory for astrophysics*, Max Planck Institute for Extraterrestrial Physics, Garching (Germany), November 26 -27, 2015. Title: Revisiting gas-phase chemistry in astrochemical models

25. *From clouds to protoplanetary disks: the astrochemical link*, Hans Harnack Haus, Berlin (Germany), October 4-9, 2015. Title: Gas-phase formation routes of complex organic molecules in the interstellar medium

24. *XIII Iberian Joint Meeting on Atomic and Molecular Physics (IBER2015)*, Aveiro (Portugal), September 6-9, 2015. Title: Product branching ratio and extent of intersystem crossing in atomic oxygen reactions with unsaturated hydrocarbons

23. *Dynamics of Molecular Collisions XXV*, Asilomar Conference Centre, Monterey (USA), July 12-17, 2015. Title: Product branching ratio and extent of intersystem crossing in atomic oxygen reactions with unsaturated hydrocarbons

22. *First General Meeting of the COST Action CM1401 "Our Astrochemical History",* Prague (Czech Republic) May 25 - 29, 2015. Title: Introductory talk on the activities of the Working Group 1 "Gas phase chemistry"

21. *Materia extraterrestre ed esplorazione dello spazio*, Bari (Italy), November 12, 2014. Title: Molecole complesse nel mezzo interstellare

20. *Our Common Origins*, University College London, London (UK), November 18-19, 2013. Title: Updates on gas-phase experiments of rate coefficients

19. *ACS 246th National Meeting*, Indianapolis (USA), September 8-12, 2013. Title: Chemical frontiers in solar system exploration

18. *Brittany Synchrotron Radiation School*, Rennes (France), March 25-29, 2013. Title: Crossed molecular beam experiments with soft-ionization mass spectrometric detection

17. *V Encuentro de Dinamica Molecular – Avances en Astroquimica y Quimica Atmosferica*, Salamanca (Spain), February 28, 2013. Title: Hydrocarbon growth in interstellar clouds and implications for prebiotic chemistry

16. *The Warm Universe: Astrochemistry at Hot and Intermediate Temperatures*, Tallinn (Estonia), May 29 – June 2, 2012. Title: Reactions of atomic oxygen with unsaturated hydrocarbons: the break-up of carbon atom skeleton

15. *S. Barthelemy Astronomy Summer School*, Osservatorio Astronomico della Regione Autonoma Valle d'Aosta, Nus (Italy), July 25-29, 2011. Title of the first lectio magistralis: Cosmochemistry. Title of the second lectio magistralis: The atmosphere of Titan

14*. NIS Colloquium 'First chemical steps towards the origin of life'*, Museo Regionale di Scienze Naturali, Torino (Italy), September 16-15, 2010. Title: Gas-phase prebiotic chemistry in the Solar System: how and where

13. *The ALMA Telescope: Heralding a new era of astrochemistry*, Boppard (Germany), May 9-12, 2010. Title: Crossed-beam studies of astrophysically relevant atom-neutral reactions

12. *Láseres y Espectroscopia Avanzada en Química (QUIMILASER)*, Seville (Spain), February 2010. Title: Recent progress in reaction dynamics studies with crossed molecular beams

11. *XXVII Internation Astronomical Union General Assembly*, Special Session SpS06 'Planetary Systems as Potential Sites for Life', Rio de Janeiro (Brazil), August 2009. Title: Gas-phase prebiotic chemistry in extraterrestrial environments

10. *XXIII International Symposium on Molecular Beams*, Dalian (China), June 1-5, 2009. Title: Crossed molecular beam studies of S(1D) and N(2D)reactions with simple hydrocarbons

9. *XII ISSOL Meeting - XV International Conference on the Origin of Life*, Firenze, August 24-29, 2008. Title: Gas-phase prebiotic chemistry in the Solar System: how and where

8. *Atomic and Molecular Interactions Gordon Conference 2008*, Colby Sawyer College, New London, NH (USA), July 6-11, 2008. Title: Crossed molecular beam studies of astronomically relevant bimolecular reactions

7. *1st Italian Astrobiology Society Workshop*, Cortona (Italy), May 29-30, 2008. Title: Gas-phase reactions relevant to prebiotic chemistry: a laboratory investigation by the crossed molecular beam technique.

6. *Second Workshop on 'Titan - Observations, Experiments, Computations, and Modeling'*, Miami, Florida (USA), March 24-26, 2008. Title: Crossed molecular beam studies of gas phase reactions relevant to the atmospheric chemistry of Titan

5. *XXIX International Symposium on Free Radicals*, Big Sky, Montana (USA), August 12-17, 2007. Title: Crossed molecular beam studies of radical-molecule and radical-radical reactions.

4. *IUGG XXIV General Assembly "Earth: our changing planet"*, Session #JMS013 Aeronomy of Planetary Atmospheres: Comparative Planetology, Perugia (Italy), July 2-17, 2007. Title: Gas-phase neutral-neutral reactions in planetary atmospheres.

3. *XVI European Conference on Dynamics of Molecular Systems*, Levico Terme (Italy), September 11-15, 2006. Title: Crossed molecular beam studies of radical-radical reactions: O(3P)+CH3 and O(3P)+C3H5

2. *2005 International Chemical Congress of Pacific Basin Societies (PACIFICHEM)*, Honolulu (Hawaii, USA), December 15-20, 2005. Title: Neutral-neutral reactions in extraterrestrial environments

1. Final Meeting of the Training and Mobility of Researchers (TMR) Network on "Astrophysical Chemistry", Perugia, April 4-5, 2002. Title: Crossed beam studies of CN and C2 reactions relevant to the formation of hydrogen deficient molecules in extraterrestrial environments

ISI-WOS PUBLICATIONS

219. G Vanuzzo, D Marchione, L Mancini, P Liang, G Pannacci, P Recio, Y Tan, M Rosi, D Skouteris, P Casavecchia, N Balucani. The Reaction N(2D) + CH2CHCN (Vinyl Cyanide): A Combined Crossed Molecular Beams and Theoretical Study and Implications for the Atmosphere of Titan. The Journal of Physical Chemistry A, in press (2022).

218. C Vastel, F Alves, C Ceccarelli, M Bouvier, I Jimenez-Serra, T Sakai, P Caselli, L Evans, F Fontani, R Le Gal, CJ Chandler, B Svoboda, L Maud, C Codella, N Sakai, A Lopez-Sepulcre, G Moellenbrock, Y Aikawa, N Balucani, E Bianchi, G Busquet, E Caux, S Charnley, N Cuello, M De Simone, F Dulieu, A Duran, D Fedele, S Feng, L Francis, T Hama, T Hanawa, E Herbst, T Hirota, M Imai, A Isella, D Johnstone, B Lefloch, L Loinard, M Maureira, NM Murillo, S Mercimek, S Mori, F Menard, A Miotello, R Nakatani, H Nomura, Y Oba, S Ohashi, Y Okoda, J Ospina-Zamudio, Y Oya, JE Pineda, L Podio, A Rimola, D Segura Cox, Y Shirley, L Testi, S Viti, N Watanabe, Y Watanabe, A Witzel, C Xue, Y Zhang, B Zhao, S Yamamoto. Hot methanol in the [BHB2007] 11 protobinary system: hot corino versus shock origin?: FAUST V. Astronomy & Astrophysics, in press (2022). https://arxiv.org/abs/2206.10176

217. C Cavallotti, A Della Libera, C-W Zhou, P Recio, A Caracciolo, N Balucani, P Casavecchia Crossed-beam and theoretical studies of multichannel nonadiabatic reactions: branching fractions and role of intersystem crossing for O (3P)+ 1, 3-butadiene Faraday Discussions, in press, 2022; doi: 10.1039/D2FD00037G208.

216 M Rosi, P Casavecchia, N Balucani, P Recio, A Caracciolo, D Skouteris, C Cavallotti. Lecture Notes in Computer Science, 13378 (2022) 260–269; doi: 10.1007/978-3-031-10562-3_19

215 G Vanuzzo, A Giusti, M Rosi, P. Casavecchia, N Balucani. Theoretical Study of the Reaction O(3P) + 1,2-Butadiene. Lecture Notes in Computer Science, 13382 (2022) 249–263; doi: 10.1007/978-3-031-10592-0_19

214. L Mancini, M Trinari, E Valenca Ferreira de Aragao, M Rosi, N Balucani. The $S^+(^4S)+SiH_2(^1A_1)$ Reaction: Toward the Synthesis of Interstellar SiS. Lecture Notes in Computer Science, 13378 (2022) 233–245; doi: 10.1007/978-3-031-10562-3_17

213. M Imai, Y Oya, B Svoboda, H Baobab Liu, B Lefloch, S Viti, Y Zhang, C Ceccarelli, C Codella, C J Chandler, N Sakai, Y Aikawa, F O Alves, N Balucani, E Bianchi, M Bouvier, G Busquet, P Caselli, E Caux, S Charnley, S Choudhury, N Cuello, M De Simone, F Dulieu, A Durán, L Evans, C Favre, D Fedele, S Feng, F Fontani, L Francis, T Hama, T Hanawa, E Herbst, S Hirano, T Hirota, A Isella, I Jímenez-Serra, D Johnstone, C Kahane, R Le Gal, L Loinard, A López-Sepulcre, L T Maud, M J Maureira, F Menard, S Mercimek, A Miotello, G Moellenbrock, S Mori, N M Murillo, R Nakatani, H Nomura, Y Oba, R O'Donoghue, S Ohashi, Y Okoda, J Ospina-Zamudio, J Pineda, L Podio, A Rimola, T Sakai, D Segura-Cox, Y Shirley, V Taquet, L Testi, C Vastel, N Watanabe, Y Watanabe, A Witzel, C Xue, B Zhao, S Yamamoto. Chemical and Physical Characterization of the Isolated Protostellar Source CB68: FAUST IV. The Astrophysical Journal, 934 (2022) 70; doi: 10.3847/1538-4357/ac77e7

212. D Marchione, L Mancini, P Liang, G Vanuzzo, F Pirani, D Skouteris, M Rosi, P Casavecchia, N Balucani. Unsaturated Dinitriles Formation Routes in Extraterrestrial Environments: A Combined Experimental and Theoretical Investigation of the Reaction between Cyano Radicals and Cyanoethene (C2H3CN). The Journal of Physical Chemistry A 126 (2022) 3569-3582; doi: https://doi.org/10.1021/acs.jpca.2c01802

211. E. Bianchi, C. Ceccarelli, C. Codella, A. López-Sepulcre, S. Yamamoto, N. Balucani, P. Caselli, L. Podio, R. Neri, R. Bachiller, C. Favre, F. Fontani, B. Lefloch, N. Sakai, D. Segura-Cox SOLIS XV. CH3CN deuteration in the SVS13-A Class I hot corino. Astronomy and Astrophysics, 662 (2022) A103; https://doi.org/10.1051/0004-6361/202141893

210. A de A Schutzer, PR Rivera-Ortiz, B Lefloch, A Gusdorf, C Favre, D Segura-Cox, A LopezSepulcre, R Neri, J Ospina-Zamudio, M De Simone, C Codella, S Viti, L Podio, J Pineda, R O'Donoghue, C Ceccarelli, P Caselli, F Alves, R Bachiller, N Balucani, E Bianchi, L Bizzocchi, S Bottinelli, E Caux, A Chacón-Tanarro, F Dulieu, J Enrique-Romero, F Fontani, S Feng, J Holdship, I Jiménez-Serra, A Jaber Al-Edhari, C Kahane, V Lattanzi, Y Oya, A Punanova, A Rimola, N Sakai, S Spezzano, IR Sims, V Taquet, L Testi, P Theulé, P Ugliengo, C Vastel, AI Vasyunin, F Vazart, S Yamamoto, A Witzel SOLIS XVI. Mass ejection and time variability in protostellar outflows: Cep E. Astronomy and Astrophysics, 662 (2022) A104; doi: 10.1051/0004-6361/202142931

209. A Rimola, N Balucani, C Ceccarelli, P Ugliengo. Tracing the Primordial Chemical Life of Glycine: A Review from Quantum Chemical Simulations. International Journal of Molecular Sciences 23 (2022) 4252; https://doi.org/10.3390/ijms23084252

208. J Perrero, J Enrique-Romero, B Martínez-Bachs, C Ceccarelli, N Balucani, P Ugliengo, A Rimola Non-energetic Formation of Ethanol via CCH Reaction with Interstellar H2O Ices. A Computational Chemistry Study ACS Earth Space Chemistry, 6 (2022)496; doi: 10.1021/acsearthspacechem.1c00369

207. S Ohashi, C Codella, N Sakai, C J Chandler, C Ceccarelli, F Alves, D Fedele, T Hanawa, A Durán, C Favre, A López-Sepulcre, L Loinard, S Mercimek, N M Murillo, L Podio, Y Zhang, Y Aikawa, N

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