



Dr H el ene LAVANANT



Associate Professor

Analysis and modelling team

Mass spectrometry and separation sciences group

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PROFESSIONAL EXPERIENCES

- 2016- Associate professor, Rouen Normandy University, France
1999- 2016 Assistant professor, Rouen Normandy University, France
1998-1999 Postdoctoral Associate; Advisor: Prof. F. W. McLafferty, Cornell University, NY, USA
1995 Internship; Advisor Prof P. J. Derrick, Institute of Mass Spectrometry, Warwick University, Coventry, UK.

EDUCATION

- 2016 *Habilitation   diriger des recherches (HDR)*
1995-1998 Ph.D. ; Advisor : Dr Y. Hoppilliard, Ecole Polytechnique, Palaiseau, France.
1995 M.S. Organic Chemistry, Ecole Polytechnique and Paris XII University, Orsay.
1994 Ecole Polytechnique, Palaiseau, France

ADMINISTRATIVE & INSTITUTIONAL RESPONSIBILITIES

- 2020- Member of the Advisor Commission of faculty specialists (CCSE, section 31) – University of Rouen, France.
2018- Scientific correspondent for the EU_FT-ICR_MS European H2020 project
2017- Scientific correspondent for the French network of high field FT ICR instruments (CNRS IR FR3624)
2010-2011 Member of the Advisor Commission of faculty specialists (CCSE, section 31) – University of Rouen, France. Selection comity for the 0403 chair of excellence in theoretical chemistry

RESEARCH INTERESTS

Mass spectrometry, ion mobility, collision cross sections, clusters, lasso peptides, polyoxometalates, biomass

SCIENTIFIC ACHIEVEMENTS

Academic record (h-index: 14)

29 publications, 0 book chapters, 0 patents, 4 invited lectures (academia & industry)

SUPERVISION ACTIVITIES

2017-2020	Clément Castilla 50 % (PhD thesis)
2018-2020	Valentina Calabrese 100% (postdoctoral researcher)
2015-2018	Sébastien Hupin 50 % (PhD thesis)
2013-2016	Kevin Jeanne-dit-Fouque 50 % (PhD thesis)
2012-2013	Kevin Jeanne-dit-Fouque 50 % (graduate student)

GRANTS AND FELLOWSHIPS

2018-2019	RIN 2017 GreenChem
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TEACHING ACTIVITIES

2010-	Lab classes in mass spectrometry 3 rd year and Master level
2009-	Group theory applied to symmetry in chemistry (2 nd year and master level)
2004-	Course leader for a 1 st year fundamental chemistry course (16h) on Atoms and molecules (100-600 students annually)
1999-	Tutorial and lab classes in fundamental chemistry to 1 st year university students

MEMBERSHIPS OF SCIENTIFIC SOCIETIES

Société Française de Spectrométrie de Masse (SFSM)
American Society for Mass Spectrometry (ASMS)

REVIEWER ACTIVITIES

2013-2020	15 reviews https://publons.com/researcher/1480862/helene-lavanant/ Journal of the American Chemical Society (2) Analytical Chemistry (1) ACS Omega (3) Journal of the American Society for Mass Spectrometry (4) Journal of Mass Spectrometry (3) Rapid Communications in Mass (2)
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CONFERENCES

Calabrese, V. ; Lavanant, H. ; Rosu, F. ; Gabelica, V. ; Afonso C. Collision cross sections of phosphoric acid cluster anions and their use as calibrants for traveling wave ion mobility 67th ASMS Conference on Mass Spectrometry and Allied Topics Atlanta, Etats Unis 2 - 6 juin 2019

Calabrese, V. ; Lavanant, H. ; Rosu, F. ; Gabelica, V. ; Afonso C. Collision cross sections of phosphoric acid cluster anions and their use as calibrants 22nd International Mass Spectrometry Conference (IMSC) Florence, Italie 26-31 août 2018

Lavanant, H., Groessler, M., Afonso, C. Ion mobility mass spectrometry of phosphoric acid cluster ions European Mass Spectrometry Conference EMSC 2018 Saarbrücken, Allemagne 11-15 mars 2018

Lavanant, H., Groessler, M., Afonso, C. Ion mobility mass spectrometry of phosphoric acid cluster ions 35th Informal Meeting on Mass Spectrometry Aussois, France 7-11 mai 2017

Jeanne Dit Fouque, K. ; Lavanant, H. ; Zirah, S. ; Steinmetz, V. ; Rebuffat, S. ; Maître, P. ; Afonso, C. Infrared Action Spectroscopy of Mechanically Interlocked Lasso Peptides 63rd ASMS Conference St. Louis, Missouri, Etats Unis 31 mai – 4 juin, 2015

PUBLICATIONS

29 Castilla, C.; Rüger, C. P.; Marcotte, S.; Lavanant, H.; Afonso, C. Direct Inlet Probe Atmospheric Pressure Photo and Chemical Ionization Coupled to Ultra-High Resolution Mass Spectrometry for the Description of Lignocellulosic Biomass J. Am. Soc. Mass Spectrom. 2020 DOI : 10.1021/jasms.0c00034

28 Marcotte, S.*; Castilla, C.; Morin, C. ; Merlet-Machour, N.* ; Carrasco-Cabrera, L.; Medaerts, F.; Lavanant, H., Afonso, C. Particulate inorganic salts and trace element emissions of a domestic boiler fed with five commercial brands of wood pellets Environ Sci Pollut Res 2020 DOI : 10.1007/s11356-020-08329-8

27 Calabrese, V.; Lavanant, H*.; Rosu, F.; Gabelica, V.; Afonso, C Collision Cross Sections of Phosphoric Acid Cluster Anions in Helium Measured by Drift Tube Ion Mobility Mass Spectrometry J. Am. Soc. Mass Spectrom. 2020 DOI : 10.1021/jasms.0c00034

26 Lavanant H*, Groessler M, Afonso C Collision cross sections of negative cluster ions of phosphoric acid in N₂ determined by drift tube ion mobility and their use in travelling wave ion mobility Int. J. Mass Spectrom. 442 (2019) 14–22 DOI : 10.1016/j.ijms.2019.04.009.

25 Hupin S, Lavanant H*, Renaudineau S, Proust A, Izzet G, Groessler M, Afonso C A calibration framework for the determination of accurate collision cross sections of polyanions using polyoxometalate standards Rap. Commun. Mass Spectrom. 2018 32(19):1703-10.

24 Jeanne Dit Fouque K, Lavanant H*, Zirah S, Hegemann JD, Fage CD, Marahiel MA General rules of fragmentation evidencing lasso structures in CID and ETD Analyst, 2018,143, 1157-1170 DOI : 10.1039/C7AN02052J

23 Piot, M., Hupin S., Lavanant H., Afonso C., Bouteiller L., Proust A., Izzet G.* Charge effect on the formation of polyoxometalate-based supramolecular polygons driven by metal coordination Inorganic Chemistry 2017, 56 (14), 8490–8496. DOI 10.1021/acs.inorgchem.7b01187

22 Jeanne. Dit Fouque K., Lavanant H.*, Zirah S., Hegemann J. D., Zimmermann M., Marahiel M. A., Rebuffat S., Afonso C. Signatures of Mechanically Interlocked Topology of Lasso Peptides by Ion Mobility–Mass Spectrometry: Lessons from a Collection of Representatives J. Am. Soc. Mass Spectrom. 2017, 28(2), 315-322 DOI 10.1007/s13361-016-1524-8.

- 21 Pepin, R.; Laszlo, K. J.; Marek, A.; Peng, B.; Bush, M. F.; Lavanant, H.; Afonso, C.; Tureček, F.* Toward a Rational Design of Highly Folded Peptide Cation Conformations. 3D Gas-Phase Ion Structures and Ion Mobility Characterization. *J. Am. Soc. Mass Spectrom.* 2016, 27 (10), 1647–1660. DOI : 0.1007/s13361-016-1437-6
- 20 Kevin Jeanne Dit Fouque, Hélène Lavanant*, Séverine Zirah, Vincent Steinmetz, Sylvie Rebuffat, Philippe Maître, and Carlos Afonso IRMPD Spectroscopy: Evidence of Hydrogen Bonding in the Gas Phase Conformations of Lasso Peptides and their Branched-Cyclic Topoisomers. *J. Phys. Chem. A* 2016, 120, 3810–3816 DOI: 10.1021/acs.jpca.6b04496
- 19 Kevin Jeanne Dit Fouque, Hélène Lavanant, Séverine Zirah, Jérôme Lemoine, Sylvie Rebuffat, Jean-Claude Tabet, Alexander Kulesza, Carlos Afonso, Philippe Dugourd and Fabien Chirot* Gas-phase conformations of capistruin – comparison of lasso branched-cyclic and linear topologies. *Rapid Commun. Mass Spectrom.* 2015, 29, 1–9 DOI: 10.1002/rcm.7231
- 18 Jeanne Dit Fouque, K.; Afonso, C.*; Zirah, S.; Hegemann, J. D.; Zimmermann, M.; Marahiel, M. A.; Rebuffat, S.; Lavanant, H. Ion Mobility–Mass Spectrometry of Lasso Peptides: Signature of a Rotaxane Topology *Anal. Chem.* 2015 87 (2), 1166–1172. DOI: 10.1021/ac503772n