

## CURRICULUM VITAE

### ALAIN BRUNELLE

born January 23, 1964

Research Director (DR1) at CNRS

Centre National de la Recherche Scientifique (CNRS)

Laboratoire d'Archéologie Moléculaire et Structurale (LAMS UMR 8220)

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#### **A/ Education**

2002 "Habilitation à Diriger des Recherches", Chemistry, Paris-Sud University, Orsay,

1990 Ph.D., Physics, Paris-Sud University, Orsay,

1986 Agrégation de Sciences Physiques, Option Physique,

1983-1987 École Normale supérieure de Saint-Cloud.

#### **B/ Professional experience**

Since 2019 Research Director (1<sup>st</sup> rank) at CNRS (LAMS, Paris)

2013-2018 Research Director (1<sup>st</sup> rank) at CNRS (ICSN, Gif-sur-Yvette)

2006-2013 Research Director (2<sup>nd</sup> rank) at CNRS (ICSN, Gif-sur-Yvette)

2002-2006 Research Associate ("Chargé de Recherche") at CNRS (ICSN, Gif-sur-Yvette),

1990-2002 Research Associate ("Chargé de Recherche") at CNRS (Institute of Nuclear Physics, IPN, CNRS, Orsay),

1988-1990 Ph.D. at IPN (CNRS, Orsay Gif),

1987-1988 Military Service, Professor of Physics, École Spéciale Militaire de Saint-Cyr Coëtquidan.

*From 1988 to 2002, my main research subject was the study of the interactions of energetic particles (ions, clusters, molecules, photons) with matter. From 2002 to 2018 at the ICSN in Gif-sur-Yvette, in charge of a project of biological imaging by mass spectrometry by cluster-TOF-SIMS and MALDI-TOF. This work was conducted in three directions: treatment and use of biological tissue sections, improvement of instrumental methods, and application to in situ studies of lipid disorders linked to human diseases. From 2010 to 2018, Head of Mass Spectrometry Group at ICSN-CNRS. Since 2019, new project at the Laboratoire d'Archéologie Moléculaire et Structurale (LAMS UMR8220, CNRS, Sorbonne Université, Paris) to study cultural heritage samples like old paintings, by submicrometric and 3D TOF-SIMS imaging.*

**Expertise field:** Mass spectrometry instrumentation (time-of-flight analysers, detectors, ion sources), Mass Spectrometry Imaging.

**C/ Ph.D. Award of the French Mass Spectrometry Society (1990),**

**Award of the Analytical Chemistry Division of the French Chemical Society (2007)**

**RCM Beynon Prize (Best Paper published in Rapid Commun. Mass Spectrom. 2015-2016)**

## D/ Lecture at the Collège de France 5 May 2014

<https://www.college-de-france.fr/site/philippe-walter/seminar-2014-05-05-11h30.htm>

## E/ Member of the French Mass Spectrometry Society and of the American Society of Mass Spectrometry, Elected Member of the SIMS International Scientific Committee (2017-2023)

Chairman of the 18th French Mass Spectrometry Conference, 2001

Past president of the French Mass Spectrometry Society, 2004-2006

Member of the scientific committee of 1st SCBA 2005, 23th JFSM 2006, Desorption 2000, Desorption 2010, SIMS XVIII 2011, SIMS XIX 2013, Desorption 2014, SIMS XX 2015, SIMS XXI 2017, SIMS XXII 2019

## F/ Participation in projects

- Coordinator of project DEFIMAGE (ANR Défi de tous les savoirs 2016-2021): "A great challenge for mass spectrometry imaging" [http://www.agence-nationale-recherche.fr/en/anr-funded-project/?tx\\_lwmsuivibilan\\_pi2%5BCODE%5D=ANR-15-CE29-0007](http://www.agence-nationale-recherche.fr/en/anr-funded-project/?tx_lwmsuivibilan_pi2%5BCODE%5D=ANR-15-CE29-0007)

- Coordinator of completed project MASS-IMAGE (ANR Blanc 2011-2014): "New methods in mass spectrometry imaging for the study of the Alzheimer's disease"

- Partner of completed projects: MASDA-EYE (ANR Piribio 2010-2013) "MASS Spectrometry imaging Data Analysis: application to pharmacotoxicology in EYE", ANTIPARK (ANR Emergence 2011-2013) "New neuroprotective and neuroregenerative compounds for Parkinson's disease", EICO-CF (2008-2010) and MACBAC (2006-2008), EU-FP6 consortium COMPUTIS (2006-2009) [www.computis.org](http://www.computis.org), EU-FP7 consortium BIOMARGIN (2013-2018): [www.biomargin.eu](http://www.biomargin.eu)

## G/ 140 publications (international peer-reviewed journals, 23 in the last 5 years), 21 peer-reviewed proceedings and other journals, 5 book chapters,

h-index 42, total number of citations 5300 (source Scopus, Nov. 2020)

100 invited conferences (26 plenary lectures at national and international conferences)

## H/ 10 most cited publications

1 IMPROVEMENT OF BIOLOGICAL TOF-SIMS IMAGING WITH A BISMUTH CLUSTER ION SOURCE

D. Touboul, F. Kollmer, E. Niehuis, A. Brunelle, O. Laprévôte  
J. Am. Soc. Mass Spectrom. 16 (2005) 1608-1618  
<http://dx.doi.org/10.1016/j.jasms.2005.06.005>

2 TISSUE MOLECULAR ION IMAGING BY GOLD CLUSTER ION BOMBARDMENT

D. Touboul, F. Halgand, A. Brunelle, R. Kersting, E. Tallarek, B. Hagenhoff, O. Laprévôte,  
Anal. Chem. 76 (2004) 1550-1559  
<http://dx.doi.org/10.1021/ac035243z>

3 BIOLOGICAL TISSUE IMAGING WITH TIME-OF-FLIGHT SECONDARY ION MASS SPECTROMETRY AND CLUSTER ION SOURCES

A. Brunelle, D. Touboul, O. Laprévôte  
J. Mass Spectrom. 40 (2005) 985-999  
<http://dx.doi.org/10.1002/jms.902>

4 IMPACT OF SLOW GOLD CLUSTERS ON VARIOUS SOLIDS. NON LINEAR EFFECTS IN SECONDARY ION EMISSION

M. Benguerba, A. Brunelle, S. Della-Negra, J. Depauw, H. Joret, Y. Le Beyec, M.G. Blain, E.A. Schweikert, G. Ben Assayag, P. Sudraud  
Nucl. Instrum. Methods Phys. Res. B 62 (1991) 8-22  
[http://dx.doi.org/10.1016/0168-583X\(91\)95922-Z](http://dx.doi.org/10.1016/0168-583X(91)95922-Z)

5 IMZML – A COMMON DATA FORMAT FOR THE FLEXIBLE EXCHANGE AND PROCESSING OF MASS SPECTROMETRY IMAGING DATA

T. Schramm, A. Hester, I. Klinkert, J.P. Both, R.M.A. Heeren, A. Brunelle, O. Laprévôte, M.F. Robbe, M. Stoekli, B. Spengler, A. Römpf  
J. Proteomics 75 (2012) 5106-5110  
<http://dx.doi.org/10.1016/j.jpro.2012.07.026>

6 TRACKS IN METALS BY MEV FULLERENES

H. Dammak, A. Dunlop, D. Lesueur, A. Brunelle, S. Della-Negra, Y. Le Beyec, Phys. Rev. Lett. 74 (1995) 1135-1138  
<http://dx.doi.org/10.1103/PhysRevLett.74.1135>

7 VERY LARGE GOLD AND SILVER SPUTTERING YIELDS INDUCED BY KEV TO MEV ENERGY AUN CLUSTERS (N = 1-13)

S. Bouneau, A. Brunelle, S. Della-Negra, J. Depauw, D. Jacquet, Y. Le Beyec, M. Pautrat, M. Fallavier, J.C. Poizat, H.H. Andersen  
Phys. Rev. B 65 (2002) 144106, 1-8  
<http://dx.doi.org/10.1103/PhysRevB.65.144106>

8 GIANT METAL SPUTTERING YIELDS INDUCED BY 20-5000 KEV/ATOM GOLD CLUSTERS

H.H. Andersen, A. Brunelle, S. Della-Negra, J. Depauw, D. Jacquet, Y. Le Beyec, J. Chaumont, H. Bernas  
Phys. Rev. Lett. 80 (1998) 5433-5436  
<http://dx.doi.org/10.1103/PhysRevLett.80.5433>

9 *IN SITU* LIPIDOMIC ANALYSIS OF NON-ALCOHOLIC FATTY LIVER BY CLUSTER TOF-SIMS IMAGING

D. Debois, M.P. Bralet, F. Le Naour, A. Brunelle, O. Laprévôte,  
Anal. Chem. 81 (2009) 2823-2831  
<http://dx.doi.org/10.1021/ac900045m>

10 LIPID IMAGING BY GOLD CLUSTER TIME-OF-FLIGHT - SECONDARY ION MASS SPECTROMETRY: APPLICATION TO DUCHENNE MUSCULAR DYSTROPHY

D. Touboul, A. Brunelle, F. Halgand, S. De La Porte, O. Laprévôte  
J. Lipid Res. 46 (2005) 1388-1395  
<http://dx.doi.org/10.1194/jlr.M500058-JLR200>