

Pierre CHAURAND, Ph.D.

Associate Professor of Chemistry

Université de Montréal
Faculté des Arts et des Sciences
Département de chimie

ACADEMIC CURSUS

- 1994 Ph.D. thesis, Université Paris-Sud (Molecular Physico-chemistry)
Title: “Désorption laser et Spectrométrie de masse par temps de vol. Aspects Fondamentaux. Applications”
Ph.D. director: Dr. Y. LE BEYEC (Directeur de Recherche au CNRS, Institut de Physique Nucléaire – Orsay, France)
- 1991 “D.E.A.” in Organic Chemistry (University Paris XI)
- 1990 “Maîtrise” in Biochemistry (University Paris XI)
- 1989 “Licence” in Biochemistry (University Paris XI)
- 1987 “D.E.U.G.” in Life and Nature Sciences (University Paris XI)

RESEARCH ACTIVITIES

• Professional background:

- 2009/... Professeur agrégé (Associate professor), Faculté des Arts et des Sciences, Département de chimie, Université de Montréal, Canada. Themes: Tissue imaging by mass spectrometry, lipidomics and proteomics applied to cancer research and organ development. Analysis of solvent preserved and formalin-fixed paraffin embedded tissue specimens.
- 2006/09 Research Associate Professor, Mass Spectrometry Research Center, and Dept. of Biochemistry, Vanderbilt University School of Medicine, Nashville USA. (Prof. R.M. CAPRIOLI).
Themes: Tissue imaging by mass spectrometry, lipidomics and proteomics applied to cancer research and organ development. Analysis of solvent preserved and formalin-fixed paraffin embedded tissue specimens.
- 2000/06 Research Assistant Professor, Mass Spectrometry Research Center, and Dept. of Biochemistry, Vanderbilt University School of Medicine, Nashville USA. (Prof. R.M. CAPRIOLI).
Themes: Tissue imaging and proteomics by mass spectrometry applied to cancer research and organ development.
- 1998/00 Research Instructor, Mass Spectrometry Research Center, and Dept. of Biochemistry, Vanderbilt University School of Medicine, Nashville USA. (Prof. R.M. CAPRIOLI).
Theme: Tissue imaging by mass spectrometry.
- 1994/98 Research Associate, Institute of Laser Medicine, University of Düsseldorf, Germany (Prof. R. KAUFMANN and B. SPENGLER).
Theme: Development of MALDI time-of-flight mass spectrometers optimized for structural analysis of biomolecules.

• **Research Themes:**

- Molecular profiling and high resolution imaging of biological tissue section by MALDI MS,
- Mass and structure analyses of biocompounds (or related) by mass spectrometry,
- Protein identification (peptide mapping, and database search),
- Peptide identification and sequencing (ESI, MALDI MS/MS and PSD MALDI),
- Conception and development of time-of-flight mass spectrometers,
- Fundamental studies of the MALDI process,
- Fundamental studies on the detection of high mass molecular ions,
- Fundamental studies on high-energy interactions between ions and matter.

• **Backgrounds and fields of competencies:**

- High mass ion production (MALDI, LDI, PDMS, SIMS and ESI),
- Technologic knowledge in: electrostatic, optic, laser, vacuum, and mechanic engineering...

HONORS

1997 Annual prize from “la Société Française de Spectrométrie de Masse”

PROFESSIONAL SOCIETIES

2003/... American Chemical Society.
2005/... American Society for Mass Spectrometry.

FUNDING

• **Pending (as PI or Co-PI):**

2009/14 Imaging Mass Spectrometry.
National Science and Engineering Research Council of Canada – Individual
discovery subvention program. (Chaurand P.)
2009 Laboratory Installation in Imaging Mass Spectrometry.
Canadian Foundation for Innovation – Leaders fund. (Chaurand P.)

• **Completed (as PI or Co-PI):**

2005/08 Preparation of Cancer tissues for MS imaging of proteins.
NIH/NCI, 5R33 CA 116123-03 (Chaurand P.)
2002/07 Developmental Biology of the Normal Mouse Prostate.
NIH/NIDDK, 5R01 DK59142-05 (Kasper S. / Chaurand P.)

PROFESSIONAL SERVICE and ACTIVITIES

• **Editorial services:**

2005/... Special Feature Article Coordinator for the *Journal of Mass Spectrometry*.

• **Journal reviewer:**

American Journal of Physiology - Lung Cellular and Molecular Physiology,

Analyst,
Analytical Biochemistry,
Analytical Chemistry,
Analytica Chimica Acta,
American Journal of Pathology,
Biochemistry,
Clinical Cancer Research,
Clinical Chemistry,
Chemical Research in Toxicology,
Combinatorial Chemistry & High Throughput Screening,
Electrophoresis,
European Journal of Mass Spectrometry,
Expert Review of Proteomics,
International Journal of Mass Spectrometry,
Journal of the American Society for Mass Spectrometry,
Journal of Mass Spectrometry,
Journal of Molecular Diagnostics,
Journal of Plant Physiology,
Journal of Proteome Research,
Neurobiology of Disease,
Pharmacogenomics,
Proteomics,
Rapid Communications in Mass Spectrometry,
Trends in Biotechnology,

• **Grant Review panels and Study sections:**

Associazione Italiana per la Ricerca sul Cancro (Italian Association for Cancer Research),
National Institutes of Health (Cancer biomarker study section),
National Cancer Institute (IMAT program study section),
Department of Defense,
National Institute on Alcohol Abuse and Alcoholism,
National Science Foundation,
Ohio Hayes Investment Funds,
U.S. Civilian Research and Development Foundation,

• **Committees:**

- 2005/06 Committee on Revealing Chemistry through Advanced Chemical Imaging, National Research Council of the National Academies.
- 2005 Thèse d'habilitation à diriger les recherches : Isabelle Fournier, Ph.D. Maître de Conférence au Laboratoire de Neuroimmunologie des Annélides, UMR 8017 de l'Université des Sciences et Technologies de Lille (Rapporteur).

TEACHING and TRAINING

• **Lecturer:**

- 2009 Spring • Clinical Proteomics Using Mass Spectrometry, in: Master of Science in Clinical Investigation program, Course Nb. MSCI 524-5026, Vanderbilt University.

- Imaging Mass Spectrometry, in: Analytical Proteomics, course Nb. BCHM 352, Vanderbilt University.
- 2008 Spring • Clinical Proteomics Using Mass Spectrometry, in: Master of Science in Clinical Investigation program, Course Nb. MSCI 524-5026, Vanderbilt University.
- Imaging Mass Spectrometry, in: Analytical Proteomics, course Nb. BCHM 352, Vanderbilt University.
- 2007 Spring • Clinical Proteomics Using Mass Spectrometry, in: Master of Science in Clinical Investigation Program, Course Nb. MSCI 524-5026, Vanderbilt University.
- Imaging Mass Spectrometry, in: Analytical Proteomics, Course Nb. BCHM 352, Vanderbilt University.
- 2006 Spring • Proteomics by Mass Spectrometry, in: Analytical Chemistry II, Course Nb. BCHM 301, Vanderbilt University.
- A Tutorial on MALDI and ESI MS Instrumentation Used in Proteomic Studies, in Analytical Chemistry II, Course Nb. CHM 313, Vanderbilt University.
- Imaging Mass Spectrometry, in: Analytical Proteomics, Course Nb. BCHM 352, Vanderbilt University.
- 2005 Spring • Proteomics by Mass Spectrometry, in: Analytical Chemistry II, Course Nb. BCHM 301, Vanderbilt University.
- Imaging Mass Spectrometry, in: Analytical Proteomics, Course Nb. BCHM 352, Vanderbilt University.
- A Tutorial on MALDI and ESI MS Instrumentation Used in Proteomic Studies, in Analytical Chemistry I, Course Nb. CHM 311, Vanderbilt University.
- 2004 Spring • A Tutorial on MALDI and ESI MS Instrumentation Used in Proteomic Studies, in Analytical Chemistry I, Course Nb. CHM 311, Vanderbilt University.
- Fall • Proteomics at Vanderbilt: An Overview, in: Healthcare Organization and Management, Course Nb. Biomedical Informatics 320, Vanderbilt University.
- 2002 Spring • Introduction to Bioinformatics for Proteomics, in: Healthcare Organization and Management, Course Nb. Biomedical Informatics 320, Vanderbilt University.
- 2000 Spring • MALDI Time-of-Flight Mass Spectrometry, in: Analytical Chemistry II, Course Nb. BCHM 301, Vanderbilt University.
- 2000 Fall • MALDI Time-of-Flight Mass Spectrometry, in: Instrumental Analytical Chemistry, Course Nb. CHM 211, Vanderbilt University.
- 1999 Fall • MALDI Time-of-Flight Mass Spectrometry, in: Topics in Advanced Biochemistry, Course Nb. BCHM 5015, Vanderbilt University.
- MALDI Time-of-Flight Mass Spectrometry, in: Instrumental Analytical Chemistry, Course Nb. CHM 211, Vanderbilt University.

• **Training:**

MALDI MS training course (theory, hands-on) for students, post-docs and faculties, Mass Spectrometry Research Center, Vanderbilt University School of Medicine.

- 2009 July 27.
- 2008 July 27.
- 2007 May 22.
- 2006 August 23.
- 2005 May 12, December 1.

2004	August 24, December 13.
2003	March 19, October 29.
2002	March 7.
2001	February 16, June 27, August 1.
2000	October 4, October 11, November 8.
1999	March 8, August 19.

STUDENT and POSTDOCTORAL FELLOWS

• Doctoral Dissertation Committee:

2008	Gwendoline Thiery, Centre National de Génotypage – Ivry, France (Rapporteur).
2006	David Touboul, Institut de Chimie des Substances Naturelles – Gif-sur-Yvette, France (Rapporteur)

• Students:

1998/09	Mentoring of Ph.D. candidates at, Mass Spectrometry Research Center, Vanderbilt University, Nashville TN, (R.M. CAPRIOLI)
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• Postdoctoral fellows:

2006/07	Joey C. Latham, Ph.D.
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PATENTS

1. **Molecular Detection by Matrix Free Desorption Ionization Mass Spectrometry.**
P. CHAURAND, J.L. NORRIS, N.A. PORTER, J. YANG and R.M. CAPRIOLI.
United States Patent Application 200801113875, May 15, 2008.

PEER REVIEWED PUBLICATIONS

51. **Variations in the Expressed Antimicrobial Peptide Repertoire of Northern Leopard Frog (*Rana pipiens*) Populations Suggest Intraspecies Differences in Resistance to Pathogens.**
J.A. TENNESSEN, D.C. WOODDHAMS, P. CHAURAND, L.K. REINERT,
D. BILLHEIMER, Y. SHYR, R.M. CAPRIOLI, M.S. BLOUIN and L.A. ROLLINS-
SMITH.
Developmental & Comparative Immunology, Vol. 33, 1247-1257 (2009).
50. **MALDI Imaging Mass Spectrometry of Integral Membrane Proteins from Ocular Lens and Retinal Tissue.**
A.C. GREY, P. CHAURAND, R.M. CAPRIOLI and K.L. SCHEY.
Journal of Proteome Research, Vol. 8, 3278-3283 (2009).
49. **Mass Spectrometry-based Proteomic Profiling of Lung Cancer.**
S. OCAK, P. CHAURAND and P.P. MASSION,
Proceedings of the American Thoracic Society, Vol. 6, 159-170 (2009).
48. **High-throughput Proteomic Analysis of Formalin-fixed Paraffin-embedded Tissue Microarrays Using MALDI Imaging Mass Spectrometry.**
M.R. GROSECLOSE, P.P. MASSION, P. CHAURAND and R.M. CAPRIOLI.
Proteomics, Vol. 8, 3715-3724 (2008).

47. **Imaging Mass Spectrometry of Intact Proteins from Alcohol Preserved Tissue Specimens: Bypassing Formalin Fixation.**
P. CHAURAND, J.C. LATHAM, K.B. LANE, J.A. MOBLEY, V.V. POLOSUKHIN,
P.S. WIRTH, L.B. NANNEY and R.M. CAPRIOLI.
Journal of Proteome Research, **Vol. 7**, 3543-3555 (2008).
46. **Enhancement of Protein Sensitivity for MALDI Imaging Mass Spectrometry after Chemical Treatment of Tissue Sections.**
E.H. SEELEY, S.R. OPPENHEIMER, D. MI, P. CHAURAND and R.M. CAPRIOLI.
Journal of the American Society for Mass Spectrometry, **Vol. 19**, 1069-1077 (2008).
45. **Monitoring Mouse Prostate Development by Profiling and Imaging Mass Spectrometry.**
P. CHAURAND, M.A. RAHMAN, T. HUNT, J.A. MOBLEY, G. GU, J.C. LATHAM,
R.M. CAPRIOLI and S. KASPER.
Molecular and Cellular Proteomics, **Vol. 7**, 411-423 (2008).
44. **MALDI Imaging Mass Spectrometry: Molecular Snapshots of Biochemical Systems.**
D.S. CORNETT, M.L. REYZER, P. CHAURAND and R.M. CAPRIOLI.
Nature Methods, **Vol. 4**, 828-833 (2007).
43. **Instrument Design and Characterization for High Resolution MALDI-MS Imaging of Tissue Sections.**
P. CHAURAND, K.E. SCHRIVER and R.M. CAPRIOLI.
Journal of Mass Spectrometry, **Vol. 42**, 476-489 (2007).
42. **Processing MALDI Mass Spectra to Improve Mass Spectral Direct Tissue Analysis.**
J.L. NORRIS, D.S. CORNETT, J.A. MOBLEY, M. ANDERSSON, E.H. SEELEY,
P. CHAURAND and R.M. CAPRIOLI.
International Journal of Mass Spectrometry, **Vol. 260**, 212-221 (2007).
41. **Genomics and Proteomics: Emerging Technologies in Clinical Cancer Research.**
C.H. CHUNG, S.L. LEVY, P. CHAURAND and D.P. CARBONE.
Critical Reviews in Oncology/Hematology, **Vol. 61**, 1-25 (2007).
40. **New Developments in Profiling and Imaging of Proteins from Tissue Sections by MALDI Mass Spectrometry.**
P. CHAURAND, J.L. NORRIS, D.S. CORNETT, J.A. MOBLEY and R.M. CAPRIOLI.
Journal of Proteome Research, **Vol. 5**, 2889-2900 (2006).
39. **Epididymis-specific Promoter-driven Gene Targeting: A Transcription Factor Which Regulates Epididymis-specific Gene Expression.**
K. SUZUKI, X. YU, P. CHAURAND, Y. ARAKI, J-J. LAREYRE, R.M. CAPRIOLI,
R.J. MATUSIK and M-C. ORGEBIN-CRIST.
Molecular and Cellular Endocrinology, **Vol. 250**, 184-189 (2006).
38. **Selective Profiling of Proteins in Cancer Cells from Fine Needle Aspirates by MALDI-TOF Mass Spectrometry.**
J.M. AMANN, P. CHAURAND, A. GONZALES, J.A. MOBLEY, P.P. MASSION,
D.P. CARBONE and R.M. CAPRIOLI.
Clinical Cancer Research, **Vol. 12**, 5142-5150 (2006).
37. **Molecular Imaging of Thin Mammalian Tissue Sections by Mass Spectrometry.**
P. CHAURAND, D.S. CORNETT and R.M. CAPRIOLI.
Current Opinion in Biotechnology, **Vol. 17**, 431-436 (2006).
36. **Proteomic Patterns of Preinvasive Bronchial Lesions.**

- S.M.J. RAHMAN, Y. SHYR, P. YILDIZ, A.L. GONZALEZ, H. LI, J. ZHANG, P. CHAURAND, K. YANAGISAWA, J. MOORE, B. SLOVIS, R. MILLER, M. NINAN, Y. MILLER, W.A. FRANKLIN, R.M. CAPRIOLI, D.P. CARBONE and P.P. MASSION.
American Journal of Respiratory and Critical Care Medicine, **Vol. 172**, 1556-1562 (2005).
35. **Imaging Mass Spectrometry: Principles and Potentials.**
P. CHAURAND, S.A. SCHWARTZ, M.L. REYZER and R.M. CAPRIOLI.
Toxicologic Pathology, **Vol. 33**, 92-101 (2005).
34. **Proteomics in Diagnostic Pathology: Profiling and Imaging Proteins Directly in Tissue Sections.**
P. CHAURAND, M.E. SANDERS, R.A. JENSEN and R.M. CAPRIOLI.
American Journal of Pathology, **Vol. 165**, 1057-1068 (2004).
33. **Proteomics in Reproductive Medicine: The Technology.**
D.L. HACHEY and P. CHAURAND.
Journal of Reproductive Immunology, **Vol. 63**, 61-73 (2004).
32. **Assessing Protein Patterns in Disease using Imaging Mass Spectrometry.**
P. CHAURAND, S.A. SCHWARTZ and R.M. CAPRIOLI.
Journal of Proteome Research, **Vol. 3**, 245-252 (2004).
31. **Integrating Histology and Imaging Mass Spectrometry.**
P. CHAURAND, S.A. SCHWARTZ, D. BILLHEIMER, B.J. XU, A. CRECELIUS and R.M. CAPRIOLI.
Analytical Chemistry, **Vol. 76**, 1145-1155 (2004).
30. **Profiling and Imaging Proteins in Tissue Sections by Mass Spectrometry.**
P. CHAURAND, S.A. SCHWARTZ and R.M. CAPRIOLI.
Analytical Chemistry, **Vol. 76**, 87A-93A (2004).
29. **Profiling and Imaging Proteins in the Mouse Epididymis by Imaging Mass Spectrometry.**
P. CHAURAND, S. FOUCHECOURT, B.B. DAGUE, B.J. XU, M.L. REYZER, M-C. ORGEBIN-CRIST and R.M. CAPRIOLI.
Proteomics, **Vol. 3**, 2221-2239 (2003).
28. **Identification, Immunolocalization, Regulation and Postnatal Development of the Lipocalin EP17 (Epididymal Protein of 17 kilodaltons) in the Mouse and Rat Epididymis.**
S. FOUCHECOURT, J.J. LAREYRE, P. CHAURAND, B.B. DAGUE, K. SUZUKI, D.E. ONG, R.J. MATUSIK, R.M. CAPRIOLI and M-C. ORGEBIN-CRIST.
Endocrinology, **Vol. 144**, 887-900 (2003).
27. **Direct Profiling and Imaging of Peptides and Proteins from Mammalian Cells and Tissue Sections by Mass Spectrometry.**
P. CHAURAND and R.M. CAPRIOLI.
Electrophoresis, **Vol. 23**, 3125-3135 (2002).
26. **Imaging Mass Spectrometry: A New Tool to Investigate the Spatial Organization of Peptides and Proteins in Mammalian Tissue Sections.**
P. CHAURAND, S.A. SCHWARTZ and R.M. CAPRIOLI.
Current Opinion in Chemical Biology, **Vol. 6**, 676-681 (2002).
25. **Prostaglandin H2 Accelerates Formation of Amyloid b1-42 Oligomers.**
O. BOUTAUD, J.J. OU, P. CHAURAND, R.M. CAPRIOLI, T.J. MONTINE and J.A. OATES.
Journal of Neurochemistry, **Vol. 82**, 1003-1006 (2002).

24. **Identification and molecular characterization of Lipocalin-type Prostaglandin D2 Synthase (PGDS) in mouse epididymal fluid using mass spectrometry.**
S. FOUCHECOURT, P. CHAURAND, B.B. DAGUE, J.J. LAREYRE, R.M. CAPRIOLI and M-C. ORGBIN-CRIST.
Biology of Reproduction, Vol. 66, 524-533 (2002).
23. **Profiling Proteins from Azoxymethane-induced Colon Tumors at the Molecular Level by MALDI Mass Spectrometry.**
P. CHAURAND, B.B. DAGUE, R.S. PEARSALL, D.W. THREADGILL, and R.M. CAPRIOLI.
Proteomics, Vol. 1, 1320-1326 (2001).
22. **Strain-based Sequence Variations and Structure Analysis of Murine Prostate Specific Spermine Binding Protein Using Mass Spectrometry.**
P. CHAURAND, B.B. DAGUE, S. MA, S. KASPER, R.M. CAPRIOLI.
Biochemistry, Vol. 40, 9725-9733 (2001).
21. **Characterization of the Lysyl-adducts of Prostaglandin H-synthases that are Derived from Oxygenation of Arachidonic Acid.**
O. BOUTAUD, C.J. BRAME, P. CHAURAND, J. LI, S.W. ROBINSON, B.C. CREWS, C. LI, L.J. MARNETT, R.M. CAPRIOLI, L.J. ROBERTS II, and J.A. OATES.
Biochemistry, Vol. 40, 6948-6955 (2001).
20. **Organic Ion Imaging of Biological Tissue with MALDI and SIMS.**
P.J. TODD, T.G. SCHAAFF, P. CHAURAND and R.M. CAPRIOLI.
Journal of Mass Spectrometry, Vol. 36, 355-369 (2001).
19. **Imaging Mass Spectrometry: A New Technology for the Analysis of Protein Expression in Mammalian Tissues.**
M. STOECKLI, P. CHAURAND, D.E. HALLAHAN and R.M. CAPRIOLI.
Nature Medicine, Vol. 7, 493-496 (2001).
18. **A Probasin-Large T Antigen Transgenic Mouse Line Develops Prostate Adeno- and Neuroendocrine-Carcinoma Having Metastatic Potential.**
N. MASUMORI, T.Z. THOMAS, P. CHAURAND, T. CASE, M. PAUL, S. KASPER, R.M. CAPRIOLI, T. TSUKAMOTO, S.B. SHAPPELL, and R.J. MATUSIK.
Cancer Research, Vol. 61, 2239-2249 (2001).
17. **Sequencing of a Branched Peptide using MALDI Time-of-Flight Mass Spectrometry.**
I. FOURNIER, P. CHAURAND, G. BOLBACH, F. LUETZENKIRCHEN, B. SPENGLER and J.C. TABEL.
Journal of Mass Spectrometry, Vol. 35, 1425-1433 (2000).
16. **Direct Profiling of Proteins in Biological Tissue Sections by MALDI Mass Spectrometry.**
P. CHAURAND, M. STOECKLI and R.M. CAPRIOLI.
Analytical Chemistry, Vol. 71, 5263-5270 (1999).
15. **Direct Sequencing of Neuropeptides in Biological Tissue by MALDI-PSD Mass Spectrometry.**
S. JESPERSEN, P. CHAURAND, F.J.C. VAN STRIEN, B. SPENGLER and J. VAN DER GREEF.
Analytical Chemistry, Vol. 71, 660-666 (1999).
14. **Peptide and Protein Identification by Matrix-Assisted Laser Desorption Ionization (MALDI) and MALDI Post-Source Decay Time-of-Flight Mass Spectrometry.**
P. CHAURAND, F. LUTZENKIRCHEN and B. SPENGLER.

Journal of the American Society for Mass Spectrometry, **Vol. 10**, 91-103 (1999).

13. **Identification of a Reversible Side Reaction During Introduction of the Isonicotinyloxycarbonyl Group on a Peptide.**
O. MELNYK, P. CHAURAND, C. ROMMENS, H. DROBECQ, J.M. WIERUSZESKI, B. SPENGLER and H. GRAS-MASSE.
Journal of Peptide Research, **Vol. 51**, 188-193 (1998).
12. **Peptide Sequencing of Charged Derivatives by Postsource Decay MALDI Mass Spectrometry.**
B. SPENGLER, F. LÜTZENKIRCHEN, S. METZGER, P. CHAURAND and R. KAUFMANN.
International Journal of Mass Spectrometry and Ion Processes, **Vol. 169/170**, 127-140 (1997).
11. **Secondary Electron Emission From a CsI Surface Due to Impacts of Very Slow Large Biomolecules.**
A. BRUNELLE, P. CHAURAND, S. DELLA-NEGRA, Y. LE BEYEC and E. PARILIS.
Rapid Communications in Mass Spectrometry, **Vol. 11**, 353-362 (1997).
10. **Post-Source Decay and Delayed Extraction in Matrix-Assisted Laser Desorption/Ionization-Reflectron Time-of-Flight Mass Spectrometry. Are There Trade-offs?**
R. KAUFMANN, P. CHAURAND, D. KIRSCH and B. SPENGLER.
Rapid Communications in Mass Spectrometry, **Vol. 10**, 1199-1208 (1996).
9. **Alkylation of C₆₀. Reaction between C₆₀ Anions and Tert-Butyl Chloride and Mass spectrometry Analysis.**
S. BOURCIER, P. CHAURAND, C. CIOT, S. DELLA-NEGRA, C. FABRE, V. GREUGNY, L. MARX, A. RASSAT and A. ROUSSEAU.
International Journal of Mass Spectrometry and Ion Processes, **Vol. 156**, 85-102 (1996).
8. **Influence of Laser Beam Direction on the Molecular Ion Ejection Angle in MALDI.**
F. AKSOUH, P. CHAURAND, C. DEPRUN, S. DELLA-NEGRA, J. HOYES, Y. LE BEYEC and R.R. PINHO.
Rapid Communications in Mass Spectrometry, **Vol. 9**, 515-518 (1995).
7. **High Energy Carbon Cluster Beams.**
K. BOUSSOFIANE-BAUDIN, A. BRUNELLE, P. CHAURAND, J. DEPAUW, S. DELLA-NEGRA, P. HÅKANSSON and Y. LE BEYEC.
International Journal of Mass Spectrometry and Ion Processes, **Vol. 130**, 73-82 (1994).
6. **Non-Linear Sputtering Effects Induced by MeV Energy Gold Clusters.**
K. BOUSSOFIANE-BAUDIN, A. BRUNELLE, P. CHAURAND, S. DELLA-NEGRA, J. DEPAUW, P. HÅKANSSON and Y. LE BEYEC.
Nuclear Instrument and Methods in Physical Research, **Vol. B 88**, 61-68 (1994).
5. **Structural Features of Lipoarabinomannan From Mycobacterium Bovis BCG. Determination of Molecular Mass by Laser Desorption Mass Spectrometry.**
A. VENISSE, J.M. BERJEAUD, P. CHAURAND, M. GILLERON and G. PUZO.
Journal of Biological Chemistry, **Vol. 268**, 12401-12411 (1993).
4. **Surface Secondary Electron and Secondary Ion Emission Induced by Large Molecular Ion Impacts.**
A. BRUNELLE, P. CHAURAND, S. DELLA-NEGRA, Y. LE BEYEC and G.B. BAPTISTA.
International Journal of Mass Spectrometry and Ion Processes, **Vol. 126**, 65-73 (1993).
3. **Preparation and Characterization of Fluorinated Fullerenes.**

A. HAMWI, C. FABRE, P. CHAURAND, S. DELLA-NEGRA, C. CIOT, D. DJURADO, J. DUPUIS and A. RASSAT.

Fullerenes Nanotubes and Carbon Nanostructures, Vol. 1(4), 499-535 (1993).

2. **Acceleration of Au_n Clusters to MeV Energies.**

C. SCHOPPMANN, P. WOHLFART, D. BRANDL, M. SAUER, C. TOMASCHKO and H. VOIT.

K. BOUSSOFIANE, A. BRUNELLE, P. CHAURAND, S. DELLA-NEGRA, J. DEPAUW, P. HÅKANSSON and Y. LE BEYEC.

Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms, Vol. B 82, 156-160 (1993).

1. **Ion Counting and Ion Intensity Measurements in Time-of-Flight Mass Spectrometry. Application to Matrix-Assisted Laser Desorption.**

G.B. BAPTISTA, A. BRUNELLE, P. CHAURAND, S. DELLA-NEGRA and Y. LE BEYEC.
Rapid Communications in Mass Spectrometry, Vol. 5, 632-637 (1991).

BOOK CHAPTERS

8 **Direct Molecular Analysis of Whole-body Animal Tissue Sections by MALDI Imaging Mass Spectrometry.**

M.L. REYZER, P. CHAURAND, P.M. ANGEL and R.M. CAPRIOLI

Methods in Molecular Biology Series: *Mass Spectrometric Imaging: History, Fundamentals and Protocols* (eds. J.V. SWEEDLER, S. RUBAKHIN), Springer, New York, NY. In press

7 **Mass Spectrometry in Cancer Biology.**

P. CHAURAND, D.B. FRIEDMAN and R.M. CAPRIOLI.

The Molecular Basis of Cancer, (Ed. J. MENDELSON et al.), Saunders Elsevier, Philadelphia PA, 3rd edition, 2008, pp 293-308.

6. **Visualizing Chemistry. The Progress and Promise of Advanced Chemical Imaging.**

Committee on Revealing Chemistry through Advanced Chemical Imaging, National Research Council of the National Academies. National Academies Press, Washington DC 2006.

5 **Post-Source Decay MALDI in Peptide Analysis.**

P. CHAURAND.

Encyclopedia of Mass Spectrometry, Volume 2 "Biological Applications, Part A: Peptides and Proteins". (Eds. R.M. CAPRIOLI, M.L GROSS), Elsevier, Oxford UK, 2005, pp 176-190.

4 **Profiling and Imaging Peptides and Proteins from Mammalian Tissue Sections by MALDI Mass Spectrometry.**

P. CHAURAND, M.L. REYZER and R.M. CAPRIOLI.

Encyclopedia of Mass Spectrometry, Volume 2 "Biological Applications, Part A: Peptides and Proteins". (Eds. R.M. CAPRIOLI, M.L GROSS), Elsevier, Oxford UK, 2005, pp 339-357.

3 **Oxygenation of Arachidonic Acid by Cyclooxygenases Generates Reactive Intermediates that Form Adducts with Proteins.**

O. BOUTAUD, J. LI, P. CHAURAND, C.J. BRAME, L.J. MARNETT, L.J. ROBERTS II, and J.A. OATES.

Advances in Experimental Medicine and Biology, Vol. 500 (Ed. P.M. DANSETTE et al.), Kluwer Academic/Plenum Publishers, 2001, pp 133-137.

2 **Profiling and Imaging of Peptides and Proteins in Biological Tissues Using MALDI MS.**

R.M. CAPRIOLI and P. CHAURAND.

Advances in Mass Spectrometry, Vol. 15 (Ed. E. GELPI), John Wiley & Sons Publishers, 2001, pp 3-18.

1 **MALDI Postsource Decay Mass Analysis.**

B. SPENGLER, P. CHAURAND and P. BOLD.

Microcharacterization of Proteins, (Eds. R. KELLNER, F. LOTTSPREICH, H.E. MEYER), Wiley-VCH, 2nd edition 1999, pp 197-211.

NON-PEER REVIEWED PUBLICATIONS

1 **Direct profiling and imaging of proteins from thin mammalian tissue sections.**

P. CHAURAND, H-R. AERNI and R.M. CAPRIOLI

LabPlus International, Vol. 19, 10-14 (2005).

ORAL COMMUNICATIONS at INTERNATIONAL MEETINGS

September 27, 2009

“Imaging mass spectrometry of tissue sections: State of the art and Future directions”
2009 HUPO World Congress – Toronto, Canada.

May 31 – June 4, 2009

“From single cells to whole body sections: Multiscale imaging of phospholipids by MALDI MS”
57th ASMS Conference – Philadelphia, PA.

June 22-26, 2008

- 1) “MALDI imaging MS, the nuts and bolts of the technology”
 - 2) “MALDI imaging mass spectrometry of tissue sections: State of the art and future directions”
- 4th Asian Oceania HUPO Meeting – Cairns, Australia.

September 14-18, 2007

“Molecular imaging of tissue sections by MALDI mass spectrometry”
Asilomar Conference on Mass Spectrometry, Mass Spectrometry in Clinical Chemistry and Molecular Diagnostics – Pacific Grove, CA.

January 19-22, 2007

“MALDI profiling and imaging in disease”
18th ASMS Sanibel Conference on Mass Spectrometry, Imaging Mass Spectrometry – Sanibel Island, FL.

September 3-7, 2006

“Imaging mass spectrometry of tissue sections: State of the art and Future directions”
Desorption 2006 Conference – Athens, Greece.

May 28 – June 1, 2006

“Selective Profiling of Proteins in Cancer Cells from Fine Needle Aspirates by MALDI-TOF Mass Spectrometry”
54th ASMS Conference – Seattle, WA.

October 9-14, 2005

“Profiling and imaging of proteins in tissues by mass spectrometry for molecular discovery in disease research and as an aid in clinical diagnosis”
6th Australian Peptide Conference – Hamilton Island, Australia.

October 4, 2003

“Profiling and imaging proteins in thin mammalian tissue sections by mass spectrometry”
9th World Congress for Psychiatric Genetics – Quebec City, Canada.

September 1-5, 2002

“MALDI imaging mass spectrometry of mammalian tissue sections, state of the art and future developments”
Desorption 2002 Conference – Estes Park, CO.

June 2-6, 2002

“MALDI MS imaging of tissue sections with a resolution of 10 microns”
50th ASMS Conference – Orlando, FL.

October 14, 2001

“Proteomics, utility in transplantation research”
World Congress of Nephrology – San Francisco, CA.

May 27-31, 2001

“Regionalization of epididymal proteins in tissue sections by mass spectrometry and correlation with mRNA expression”
49th ASMS Conference – Chicago, IL.

March 8, 2001

“Profiling and imaging of peptides and proteins in mammalian tissues using mass spectrometry”
The Pittsburgh Conference (PITTCON 2001) – New Orleans, LA.

September 3-5, 2000

“Direct imaging of tissue sections by MALDI mass spectrometry. Novel aspects. Applications”
Desorption 2000 Conference – Saint-Mâlo, France.

June 11-15, 2000

“Following cancer progression by MALDI mass spectrometry”
48th ASMS Conference – Long Beach, CA.

June 12-18, 1999.

“Protein fingerprinting of tissue slices by MALDI time-of-flight mass spectrometry”
47th ASMS Conference – Dallas, TX.

September 17, 1997

“Identification de protéines par spectrométrie de masse par temps de vol”
14^{èmes} Journées Françaises de Spectrométrie de masse – Lille, France.

September 20-21, 1994

“Influence de l’angle d’incidence du laser sur l’angle d’éjection des ions secondaires en désorption par MALDI”
11^{èmes} Journées Françaises de Spectrométrie de masse – Rouen, France.

May 29 – June 3, 1994

“Influence of laser beam direction on the molecular ion ejection angle in MALDI”
42nd ASMS Conference – Chicago, IL.

INVITED SPEAKER

September 23, 2009

“From single cells to whole body sections: Multiscale imaging of phospholipids by MALDI MS”

8th LC-MS CVG Annual Symposium and Exhibition, Montreal, Canada.

May 6, 2009

“Molecular imaging of thin tissue sections by MALDI mass spectrometry”

Health Canada’s Environmental Health and Research Bureau, Ottawa, Canada.

November 25, 2008

“Imagerie Moléculaire à Partir de Sections Tissulaires Minces par Spectrométrie de Masse MALDI”

Université de Montréal, Montréal, Canada.

November 1-5, 2008

“MALDI imaging mass spectrometry of tissue sections: State of the art and future directions”

Mass Spectrometry Application to the Clinical Laboratory – San Diego, CA.

July 3-4, 2008

“Molecular imaging of tissue sections by MALDI MS: Applications in cancer research”

Clinical Proteomics in Oncology 2008 – Dijon, France.

October 6, 2007

“MALDI imaging mass spectrometry of tissue sections: Applications in cancer research”

Konkuk International Symposium for Biological Science 2007 – Konkuk University School of Medicine, Seoul, South Korea.

September 19, 2007

“Molecular imaging of tissue sections by MALDI MS”

Proteomics Supergroup Meeting – University of California Los Angeles, Los Angeles, CA.

September 19, 2007

“Molecular imaging of tissue sections by MALDI MS”

University of California San Diego, La Jolla, CA.

May 17-18, 2007

“Molecular imaging of tissue sections by MALDI mass spectrometry”

Gulliver Multiscale Bioimaging Workshop – Lawrence Berkeley National Laboratory, Berkeley, CA.

September 25, 2006

“Imaging mass spectrometry: Principles and application”

FACSS 2006, Federation of Analytical Chemistry & Spectroscopy Societies – Lake Buena Vista, FL.

March 12-15, 2006

“Selective Profiling of Proteins in Cancer Cells from Fine Needle Aspirates by MALDI-TOF Mass Spectrometry”

2nd Annual US HUPO – Boston, MA.

November 13, 2005

“Imagerie des protéines par spectrométrie de masse à partir de sections tissulaires minces.

Découverte de biomarqueurs et aide au diagnostique clinique”

Colloque “Apport de la protéomique en recherche clinique: du présent au futur” – Toulouse, France

November 12, 2005

“Imagerie des protéines par spectrométrie de masse à partir de sections tissulaires minces.

Découverte de biomarqueurs et aide au diagnostique clinique”

Université de Montpellier, Montpellier, France

October 21-23, 2005

“Imaging mass spectrometry: Applications in cancer research”

AACR Meeting: Colorectal Cancer: Molecular Pathways and Therapies – Dana Point, CA.

October 8, 2005

“Profiling and imaging of proteins in tissues by mass spectrometry for molecular discovery in disease research and as an aid in clinical diagnosis”
Monash University, Clayton, Australia.

September 18-20, 2005

“Profiling and imaging of proteins in tissues by mass spectrometry for molecular discovery in disease research and as an aid in clinical diagnosis”
Roswell Cancer Center, Buffalo, NY.

May 19-20, 2005

“Profiling and imaging of proteins in tissues by mass spectrometry for molecular discovery in disease research and as an aid in clinical diagnosis”
The 19th Annual J.R. Brunner Protein Symposium – Michigan State University, East Lansing, MI.

April 29-30, 2005

“Imaging mass spectrometry to monitor response to drug therapy”
EGRF Summit 2005 – Boca Raton, FL.

January 10-13, 2005

“High mass ion detection for cell imaging and answering million Dalton questions”
WCBP 2005 Meeting, 9th Symposium on the Interface of Regulatory and Analytical Sciences for Biotechnology Health Products – Washington, DC.

November 7-11, 2004

“Tissue imaging and profiling of proteins by mass spectrometry for discovery in clinical and biological research”
2004 American Association of Pharmaceutical Scientists Meeting and Exposition – Baltimore, MD.

October 5, 2004

“Tissue based mass spectrometry techniques and applications”
Gene identification, microarray and informatics technologies and Parkinson’s disease – University of Rochester Medical Center, Rochester, NY.

September 24-26, 2004

“Imaging mass spectrometry: a new tool to investigate the spatial distribution of peptides and proteins in mammalian tissue sections”
South Eastern Lipid Research Conference – Pine Mountain, GA.

August 14, 2004

“Profiling and imaging of proteins in tissue sections using MALDI mass spectrometry. Direct applications to clinical diagnosis and drug discovery”
18th Symposium of the Protein Society – San Diego, CA.

July 25-30, 2004

“Profiling and imaging of proteins in tissues by MALDI mass spectrometry for molecular discovery in disease research and as an aid in clinical diagnosis”
Gordon Conference: Mechanisms of Toxicity – Colby College, Waterville, MA.

June 15, 2004

“Profiling and imaging of proteins in tissue sections using MALDI mass spectrometry. Direct applications to clinical diagnosis and drug discovery”
Society for Toxicologic Pathology Annual Symposium – Salt Lake City, UT.

April 23, 2004

“Imaging mass spectrometry: a new tool to investigate the spatial distribution of peptides and proteins in mammalian tissue sections”
University of Manitoba, Winnipeg, Canada.

December 20, 2003

“Profilage et imagerie de protéines à partir de sections tissulaires minces par spectrométrie de masse MALDI temps de vol”
Colloque “Génomique et Protéomique, Application de Nouvelles Technologies à la Mucoviscidose” – Paris, France.

October 27, 2003

“Imaging mass spectrometry: a new tool to investigate the spatial distribution of peptides and proteins in mammalian tissue sections”
2003 Cancer Center Retreat – University of Alabama Comprehensive Cancer Center Retreat, Birmingham, AL.

June 21-25, 2003

“Profiling and imaging proteins in thin mammalian tissue sections by mass spectrometry”
26th Annual Scientific Meeting of the Research Society on Alcoholism – Fort Lauderdale, FL.

September 17-20, 2002

“Profilage et imagerie de protéines à partir de sections tissulaires minces par spectrométrie de masse MALDI temps de vol”
19^{ème} Journées Françaises de Spectrométrie de Masse – Chaville, France.

June 29 – July 2, 2002

“Profiling and imaging proteins in tissue sections using mass spectrometry as a discovery tool in biomedical research”
25th Annual Scientific Meeting of the Research Society on Alcoholism, 11th Congress of the International Society for Biomedical Research on Alcoholism – San Francisco, CA.

October 1-4, 2001

“Profiling and imaging of peptides and proteins in biological tissues and samples using MALDI MS”
40th Eastern Analytical Symposium – Atlantic City, NJ.

August 26-30, 2001

“Direct tissue analysis for profiling and imaging of proteins”
American Chemical Society 222nd National Meeting – Chicago, IL.

September 23-26, 2001

“Profiling and imaging of proteins in tissues by MALDI MS”
53rd American Chemical Society Southeast Regional Meeting – Savannah, GA.

July 8-11, 2001

“Profiling and imaging of peptides and proteins in biological tissue sections by mass spectrometry”
Gordon Conference on Drug Metabolism – Plymouth, NH.

May 12, 2001

“MALDI MS profiling and imaging of proteins and peptides in cancer tissue”
Proteomic seminar – Pittsburgh, PA.

January 24, 2001

“Proteomics by mass spectrometry. Strategies and developments”
6th International Conference on Tolerance Induction – Tucson, AZ.

October 27, 2000

“Profiling and imaging of peptides and proteins in tissue sections using mass spectrometry”
Gulf Coast Chapter of the Society of Toxicology Meeting – Austin, TX.

September 24, 2000

“Molecular image analysis of tissue sections for peptides and proteins using mass spectrometry”
27th Annual Conference of the Federation of Analytical Chemistry and Spectroscopy Societies –
Nashville, TN.

June 4-8, 2000

“Differential protein expression in juxtaposed malignant versus benign lesions via mass spectrometry”
Functional Genomics session of the American Society for Pharmacology and Experimental Therapeutics Meeting – Boston, MA.

May 23, 2000

“Proteomics by mass spectrometry. Strategies and developments”
Cystic Fibrosis Foundation Conference – Williamsburg, VA.

April 18, 2000

“Identification of tumor specific biomarkers in colon cancer by MALDI mass spectrometry”
Experimental Biology 2000 Meeting – San Diego, CA.

March 11-13, 1998

“Protein analysis by MALDI and PSD-MALDI-TOF MS”
Mass Spectrometry Applied to Chemical and Biological Warfare Agents Conference – Bouray sur
Juine, France

October 31, 1997

“Analyse de biomolécules par spectrométrie de masse par temps de vol”
Université de Reims, Reims, France.

May 27, 1997

“Analyse de biomolécules par spectrométrie de masse par temps de vol”
Institut Pasteur de Lille, Lille, France.

EDUCATIONAL SYMPOSIUMS

February 2, 2007

“MALDI imaging mass spectrometry of tissue sections: State of the art and future directions”
Tennessee Tech University, Cookeville, TN.

September 26-30, 2005

“MS Instrumentation”
Clinical Proteomics: Today and Tomorrow – Vanderbilt University, Nashville TN.

November 23, 2004

“Profiling and imaging of proteins in tissues by mass spectrometry for molecular discovery in disease research and as an aid in clinical diagnosis”
University of Michigan, Ann Harbor, MI.

October 28, 2004

“Profiling and imaging of proteins in tissues by mass spectrometry for molecular discovery in disease research and as an aid in clinical diagnosis”
University of Louisville, Louisville, KY.

December 4-5, 2003

“Role of mass spectrometry in systems biology: an overview of the technology”
NIEHS/DERT Science Retreat – Southern Pines, NC.

November 21-24, 2002

“A tutorial on MALDI and ESI MS instrumentation used in proteomic studies”
1st Human Proteome Organization (HUPO) World Congress – Versailles, France.

June 7-11, 2002

“Finding cancer genes: high-density array technology”
Genetic in Oncology Workshop – Stevenson, WA.

May 19-22, 2002

Workshop: “Mass spectrometry imaging”
Proteomics, The Next Biological Challenge – Vanderbilt University, Nashville, TN.

March 26-29, 2002

“La spectrométrie de masse par temps de vol: instrumentation et nouveaux développements”
Forum Labo 2002 – Paris, France.

September 1-10, 2001

“Time-of-Flight Mass Spectrometry and related MS/MS techniques”
NATO ASI summer school, New Frontiers in Mass Spectrometry. Recent Development
in Instrumentation and Applications – Tétouan, Morocco.

EXTRAMURAL SHORT COURSES

March 8, 2004

March 9, 2003

March 20, 2002

“MALDI time-of-flight mass spectrometry: fundamentals and applications. What you need to know to get started”
PITTCON Conferences.

July 30, 2009

June 14, 2008

November 15, 2007

July 6, 2006

July 13, 2005

November 13, 2003

“Imaging mass spectrometry: Principles and potentials”
Proteomic Short Course, Cold Spring Harbor Laboratory – Cold Spring Harbor NY.

July 29, 2008

“Molecular imaging of tissue sections by MALDI mass spectrometry”
Genomic and Proteomic Hand-on Workshop: From Sample Preparation to Data Analysis –
National Jewish Medical and Research Center, Denver CO.