



# Michèle Auger

Professor  
Biophysical Chemistry

## Business Address

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## Civil Status

Born in Grand-Mère, P.Q., Canada  
March 30<sup>th</sup>, 1963

## Academic Background

Ph.D. (Chemistry)	University of Ottawa	1986-1990
<i>Supervisor: Dr. Ian C.P. Smith</i>		
B.Sc. (Chemistry)	Université du Québec à Trois-Rivières	1982-1985

## Positions Held - Université Laval

<b>Member</b>	CQMF*	2009-present
<b>Member</b>	PROTEO (formerly CREFSIP**)	2007-present
<b>Chair</b> of Undergraduate Studies	Department of Chemistry	2005-present
<b>Chair</b> of Graduate Studies	Department of Chemistry	2004-2005
<b>Acting Chair</b> of Graduate Studies	Department of Chemistry	2002-2003
<b>Associate Member</b>	CREFSIP	2000-2007
<b>Full Professor</b>	Department of Chemistry	2000-present
<b>Associate Professor</b>	Department of Chemistry	1996-2000
<b>Member</b>	CERSIM*** (now CERMA****)	1991-present
<b>Assistant Professor</b>	Department of Chemistry	1991-1996

\* CQMF (Quebec Center on Functional Materials)  
\*\* PROTEO, CREFSIP (Protein Function, Structure and Engineering Research Center)  
\*\*\* CERSIM (Macromolecular Science and Engineering Research Center)  
\*\*\*\* CERMA (Advanced Materials Research Center)

## Positions Held - External

<b>Postdoctoral Fellow</b>		1990-1991
<i>Supervisor : Dr. Robert G. Griffin</i> Massachusetts Institute of Technology		
<b>Demonstrator</b>		1986-1989
Department of Chemistry, University of Ottawa		
<b>Research Assistant</b>		1983-1985
Centre de recherche en photobiophysique, Université du Québec à Trois-Rivières		

**Distinctions and Scholarships**

- › Fellow of the Chemical Institute of Canada, 2010
- › Women in Science Award, YWCA Cocktail des Sciences, Québec, 2008
- › Clara Benson Award, Canadian Society for Chemistry, 2007
- › Professeur étoile (teaching award), FSG, Université Laval, 1999, 2002, 2004 and 2005
- › Barringer Award, Spectroscopy Society of Canada, 2002
- › Best Professor, Department of Chemistry, Université Laval, 1997
- › Women's Faculty Award, Natural Sciences and Engineering Research Council of Canada (NSERC), 1991-1996
- › Governor General's Gold Medal, Graduate Studies, University of Ottawa, 1990
- › Postdoctoral Fellowship, NSERC, 1990-1991
- › Postdoctoral Fellowship (declined), Fonds pour la formation de chercheurs et l'aide à la recherche (FCAR), 1990-1991
- › 1967 Science and Engineering Scholarship, NSERC, 1986-1989
- › Ph.D. Scholarship (declined), FCAR, 1988-1990
- › M.Sc. Scholarship (declined), FCAR, 1986-1987
- › Entrance Scholarship, University of Ottawa, 1986-1989
- › Undergraduate Research Scholarship, NSERC, 1984-1985
- › Scholarship from the «Fondation du Centre des Études Universitaires», Université du Québec à Trois-Rivières, 1982

**Selection Committees**

- › Member of the Discovery Accelerator Supplements committee, NSERC, 2007, 2008, 2009
- › Member of the FQRNT Committee for the evaluation of CFI Leaders Opportunity Fund applications in chemistry and physics, 2006
- › Chair of the grant selection committee 24 (Inorganic/Organic Chem.), NSERC, 2003
- › Member of the grant selection committee 24 (Inorganic/Organic Chem.), NSERC, 2000-2003
- › Member of evaluation committees for NSERC NMR equipment grants, 1997-1999
- › Chair of the grant selection committee for the program «Établissement de Nouveaux Chercheurs», Fonds FCAR, 1997
- › Member of the grant selection committee for the program «Établissement de Nouveaux Chercheurs», Fonds FCAR, 1993-1997
- › Member of the selection committee for postdoctoral fellowships, Fonds FCAR, 1996-1999

**Participation to Different Committees**

- › Member of the «Comité paritaire sur le rattachement double» du Syndicat des Professeurs de l'Université Laval, 2009-present
- › Member of the CREPUQ Committee for the evaluation of the PhD program in Chemistry at the Université du Québec à Montréal, 2007
- › Member of the Committee on International Science, Engineering and Technology (CISSET) of the National Research Council, 2003-2008
- › Member of the Steering Committee, National Ultrahigh-Field NMR Facility for Solids, University of Ottawa, National Research Council, 2002-present
- › Member of the Management Committee, Eastern Canada High-Field NMR Facility, University of Montreal and McGill, 2002-present

**Organization of Meetings and Events**

- › Co-organizer of the Symposium «Advances in Solid-State NMR of Biological Molecules» at Pacifichem 2010, Honolulu (Hawaii), December 15-20, 2010
- › Member of the organizing committee for the International Conference on Organized Molecular Films- LB-13 to be held in Quebec City, July 19-23, 2010
- › Member and Treasurer of the Organizing Committee for the event «Les 24 Heures de la Chimie» held in the Department of Chemistry at Université Laval, March 26<sup>th</sup>, 2009.
- › Member of the Organizing Committee for the event «Les filles et les sciences, un duo électrisant», Université Laval, February 16<sup>th</sup>, 2008
- › Organization of exhibits on Chemistry of Odors, Expo Québec Regional Fair, August 15-26, 2007
- › FASEB Conference on «Molecular Biophysics of Cellular Membranes», Session Chair, Vermont Academy, July 1-6, 2006
- › Member and Treasurer of the Organizing Committee for the event «Les 24 Heures de la Chimie» held in the Department of Chemistry at Université Laval, March 30<sup>th</sup>, 2006
- › Organization of the 16<sup>th</sup> MOOT NMR Minisymposium, Université Laval, September 26-28, 2003
- › Member of the national organizing committee for the XX<sup>th</sup> International Conference on Magnetic Resonance in Biological Systems, Toronto, August 25-30, 2002
- › Organization of the symposium «Structure et fonction des protéines: Aujourd'hui une protéine, demain un proteome», 70<sup>th</sup> ACFAS Annual Meeting, Université Laval, May 15-16, 2002
- › Organization of the 8<sup>th</sup> CERSIM symposium «Les polymères au service de la médecine: des biomatériaux aux biosenseurs», Université Laval, January 29, 1999
- › Organization of the symposium «Structure et fonctions des membranes biologiques: de la physique à la biologie», 66<sup>th</sup> ACFAS Annual Meeting, Université Laval, May 12-13, 1998
- › Organization of the symposium «Spectroscopic methods in biology and medicine», 40<sup>th</sup> Annual Meeting of the Canadian Federation of Biological Societies, Québec, June 21, 1997
- › Organization of the 9<sup>th</sup> MOOT NMR Minisymposium, Université Laval, October 5-6, 1996
- › Member of the organizing committee for the 39<sup>th</sup> Meeting of the Spectroscopy Society of Canada, Université Laval, August 16-18, 1993

**Scientific Collaborations**

- › Stéphane M. Gagné, Département de biochimie, Université Laval
- › Roger C. Levesque, Département de biologie médicale, Université Laval
- › Jean-François Morin, Département de chimie, Université Laval
- › Jean-François Paquin, Département de chimie, Université Laval
- › Michel Pézolet, Département de chimie, Université Laval
- › Roxane Pouliot, Faculté de pharmacie, Université Laval
- › Christian Salesse, Département d'ophtalmologie, Université Laval
- › Normand Voyer, Département de chimie, Université Laval

**Membership in Scientific Organizations**

- › Member of ACFAS «Association Francophone pour le Savoir»
- › Member of the American Chemical Society
- › Member of the Biophysical Society (USA)
- › Member and Treasurer of the Biophysical Society of Canada
- › Member of the Canadian Society for Chemistry

## Research Interests

**Study of the structure and dynamics of biological macromolecules by solid-state NMR and vibrational spectroscopy**

- Interaction and structure of extrinsic and intrinsic membrane proteins in model membranes
- Interaction between novel antimicrobial peptides and model membranes
- Interaction between an endolysin from the phage  $\phi$ KZ and membranes
- Interaction between amyloid peptides and membranes
- Study of recombinant and natural spider silk
- Interactions between anticancer drugs (derived from chloroethylurea) and lipid bilayers
- Study of magnetically oriented bilayers (bicelles)
- Synthesis and characterization of fluorinated lipids
- Physicochemical characterization of normal and psoriatic skin substitutes

## Students Supervised and Co-supervised

11 Ph.D. and 24 M.Sc. students supervised  
4 Ph.D. and 8 M.Sc. students co-supervised  
8 postdoctoral fellows supervised since 1992

## Refereed Publications

83. Auger, M., **2010**. *Structural and dynamics studies of lipids by solid-state NMR*, Encycl. Mag. Reson., [on line](#) (DOI: 10.1002/9780470034590.emrstm1100).
82. Thibeault, D., Auger, M., Morin, J.-F., **2010**. Synthesis of fluorine-containing molecular rotors and their assembly on gold nanoparticles, *Eur. J. Org. Chem.*, 3049-3067.
81. Ouellet, M., Voyer, N., Auger, M., **2010**. *Membrane interactions and dynamics of a 21-mer cytotoxic peptide: A solid-state NMR study*, *Biochim. Biophys. Acta*, **1798**, 235-243.
80. Cloutier, I., Paradis-Bleau, C., Giroux, A.-M., Pigeon, X., Arseneault, M., Levesque, R.C., Auger, M., **2010**. *Biophysical studies of the interactions of the phage  $\phi$ KZ gp144 lytic transglycosylase with model membranes*, *Eur. Biophys. J.*, **39**:263-276.
79. Giguère, J.-B., Thibeault, D., Cronier, F., Marois, J.-S., Auger, M., and Morin, J.-F., **2009**. *Synthesis of [2]- and [3]rotaxanes through Sonogashira coupling*, *Tet. Lett.*, **50**, 5497-5500.
78. Labbé, J.-F., Cronier, F., C.-Gaudreault, R., and Auger, M., **2009**. *Spectroscopic characterization of DMPC/DOTAP cationic liposomes and their interaction with DNA and drugs*, *Chem. Phys. Lipids*, **159**, 91-101.
77. Le Bouch, N., Auger, M., and Leclerc, M., **2008**. *Structure and segmental motions in a substituted polythiophene: a solid-state NMR study*, *Macromol. Chem. Phys.*, **209**, 2455-2462.
76. Fournier, I., Barwicz, J., Auger, M., and Tancrede, P., **2008**. *The chain conformational order of ergosterol- or cholesterol-containing DPPC bilayers as modulated by Amphotericin B: a FTIR study*, *Chem. Phys. Lipids*, **151**, 41-50.
75. Ouellet, M., and Auger, M., **2008**. *Structure and membrane interactions of antimicrobial peptides as viewed by solid-state NMR spectroscopy*, *Ann. Rep. NMR Spectrosc.*, **63**, 1-21.
74. Lefèvre, T., Leclerc, J., Rioux-Dubé, J.F., Buffeteau, T., Paquin, M.-C., Rousseau, M.-E., Cloutier, I., Auger, M., Gagné, S.M., Boudreault, S., Cloutier, C., and Pérolet, M., **2007**. *Conformation of spider silk proteins in situ in the intact major ampullate gland and in solution*, *Biomacromolecules*, **8**, 2342-2344.
73. Bernard, G., Auger, M., Soucy, J., and Pouliot, R., **2007**. *Physical characterization of the stratum corneum of an in vitro psoriatic skin model by ATR-FTIR and Raman spectroscopies*, *Biochim. Biophys. Acta*, **1770**, 1317-1323.

72. Ouellet, M., Doucet, J.-D., Voyer, N., and Auger, M., **2007**. *Membrane topology of a 14-mer model amphipathic peptide: A solid-state NMR spectroscopy study*, *Biochemistry*, 46, 6597-6606.
  71. Cronier, F., Patenaude, A., C.-Gaudreault, R., and Auger, M., **2007**. *Membrane composition modulates the interaction between a new class of antineoplastic agents derived from chloroethylurea and lipid bilayers: A solid-state NMR and FTIR spectroscopic study*, *Chem. Phys. Lipids*, 146, 125-135.
  70. Paradis-Bleau, C., Cloutier, I., Sanschagrin, F., Lemieux, L., Laroche, J., Otis, F., Auger, M., Garnier, A., and Levesque, R.C., **2007**. *Autotranslocation and lysis mechanism of the Pseudomonas aeruginosa bacteriophage  $\phi$ KZ endolysin*, *FEMS Microbiology Letters*, 266, 201-209.
  69. Ouellet, M., Otis, F., Voyer, N., and Auger, M., **2006**. *Biophysical studies of the interactions between 14-mer and 21-mer model amphipathic peptides and membranes: insights on their modes of action*, *Biochim. Biophys. Acta*, 1758, 1235-1244.
  68. Ouellet, M., Bernard, G., Voyer, N., and Auger, M., **2006**. *Insights on the interactions of synthetic amphipathic peptides with model membranes as revealed by  $^{31}\text{P}$  and  $^2\text{H}$  solid-state NMR and infrared spectroscopies*, *Biophys. J.*, 90, 4071-4084.
  67. Marcotte, I., Bélanger, A., and Auger, M., **2006**. *The orientation effect of gramicidin A on bicelles and  $\text{Eu}^{3+}$ -doped bicelles as studied by solid-state NMR and FTIR spectroscopy*, *Chem. Phys. Lipids*, 139, 137-149.
  66. Epanand, R.F., Schmitt, M.A., Gellman, S.H., Sen, A., Auger, M., Hughes, D.W. and Epanand, R.M., **2005**. *Bacterial species selective toxicity of two isomeric alpha/beta peptides: role of membrane lipids*, *Molec. Membrane Biol.*, 22, 457-469.
  65. Marcotte, I., and Auger, M., **2005**. *Bicelles as model membranes for solid- and solution-state NMR studies of membrane peptides and proteins*, *Concepts Magn. Reson.*, 24A, 17-37.
  64. Arnold, A., Cloutier, I., Ritcey, A.M., and Auger, M., **2005**. *Temperature and pressure dependent growth and morphology of DMPC/DSPC domains studied by Brewster Angle Microscopy*, *Chem. Phys. Lipids*, 133, 165-179.
  63. Richard, J.-A., Kelly, I., Marion, D., Auger, M., and Pézolet, M., **2005**. *The structure of  $\beta$ -purothionin in membranes: A two-dimensional infrared correlation spectroscopy study*, *Biochemistry*, 44, 52-61.
  62. Wattraint, O., Arnold, A., Auger, M., Bourdillon, C., and Sazarin, C., **2005**. *Lipid bilayer tethered inside a nanoporous support: A solid-state NMR investigation*, *Anal. Biochem.*, 336, 253-261.
  61. Arnold, A., Paris, M., and Auger, M., **2004**. *Anomalous diffusion in a gel-fluid lipid environment: a combined solid-state NMR and obstructed random-walk perspective*, *Biophys. J.*, 87, 2456-2469.
  60. Marcotte, I., Ouellet, M., and Auger, M., **2004**. *Insights on the interaction of Met-enkephalin with negatively charged membranes - An infrared and solid-state NMR spectroscopic study*, *Chem. Phys. Lipids*, 127, 175-187.
  59. Marcotte, I., Separovic, F., Auger, M., and Gagné, S.M., **2004**. *A multidimensional  $^1\text{H}$  NMR study to investigate the effect of membrane composition on enkephalin conformation*, *Biophys. J.*, 86, 1587-1600.
  58. Marcotte, I., Dufourc, E.J., Ouellet, M., and Auger, M., **2003**. *Study of the interaction of the neuropeptide Met-enkephalin with modified bicelles by  $^{31}\text{P}$  and  $^2\text{H}$  solid-state NMR spectroscopy*, *Biophys. J.*, 85, 328-339.
  57. Marcotte, I., Wegener, K., Lam, Y.H., Chia, B., de Planque, M.R.R., Bowie, J.H., Auger, M., and Separovic, F., **2003**. *Interaction of antimicrobial peptides from Australian amphibians with lipid membranes*, *Chem. Phys. Lipids*, 122, 107-120.
  56. Auger, M., **2002**. *Biological and pharmaceutical applications of solid-state NMR spectroscopy*, *Can. J. Analyt. Sci. Spectrosc.*, 47, 184-189.
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55. Richard, J.-A., Kelly, I., Marion, D., Pézolet, M., and Auger, M., **2002**. *Interaction between  $\beta$ -purothionin and dimyristoylphosphatidylglycerol: A  $^{31}\text{P}$  NMR and infrared spectroscopic study*, *Biophys. J.*, **83**, 2074-2083.
54. Paquet, M.-J., Fournier, I., Barwicz, J., Tancrède, P., and Auger M., **2002**. *The effects of amphotericin B on pure and ergosterol- or cholesterol-containing dipalmitoyl-phosphatidylcholine bilayers as viewed by  $^2\text{H}$  NMR*, *Chem. Phys. Lipids*, **119**, 1-11.
53. Pouliot, R., Saint-Laurent, A., Chypre, C., Audet, R., Vitté-Mony, I., C.-Gaudreault, R., and Auger, M., **2002**. *Spectroscopic characterization of nanoErythroosomes in the absence and presence of conjugated polyethyleneglycols: a FTIR and  $^{31}\text{P}$  NMR study*, *Biochim. Biophys. Acta*, **1564**, 317-324.
52. Paquet, M.-J., and Auger, M., **2001**. *Determination of the conformation of leucine-enkephalin by rotational resonance  $^{13}\text{C}$  solid-state NMR spectroscopy*, *Can. J. Analyt. Sci. Spectrosc.*, **6**, 182-187.
51. Saint-Laurent, A., Boudreau, N., Larivière, D., Legault, J., C.-Gaudreault, R., and Auger, M., **2001**. *Membrane interactions of a new class of anticancer agents derived from arylchloro-ethylurea: A FTIR spectroscopic study*, *Chem. Phys. Lipids*, **111**, 163-175.
50. Paquet, M.-J., Laviolette, M., Pézolet, M., and Auger, M., **2001**. *1D and 2D FTIR study of the aggregation of cytochrome c in the presence of dimyristoylphosphatidylglycerol*, *Biophys. J.*, **91**, 305-312.
49. Biron, E., Voyer, N., Meillon, J.-C., Cormier, M.E., and Auger, M., **2000**. *Conformational and orientational studies of artificial ion channels incorporated into lipid bilayers*, *Biopolymers*, **55**, 364-372.
48. Auger, M., **2000**. *Biological membrane structure by solid-state NMR*, *Curr. Issues Mol. Biol.*, **2**, 119-124.
47. Picard, F., Pézolet, M., Bougis, P.E., and Auger, M., **2000**. *Hydrophobic and electrostatic cardiotoxin-phospholipid interactions as seen by one- and two-dimensional, MAS and static  $^{31}\text{P}$  NMR spectroscopy*, *Can. J. Analyt. Sci. Spectrosc.*, **45**, 72-83.
46. Nabet, A., Auger, M., and Pézolet, M., **2000**. *Investigation of the temperature behavior of the methylene stretching bands of phospholipid acyl chains by two-dimensional infrared correlation spectroscopy*, *Appl. Spectrosc.*, **54**, 948-955.
45. Darmstadt, H., Roy, C., Kaliaguine, S., Xu, G., Auger, M., Tuel, A., and Ramaswamy, W., **2000**. *Solid state  $^{13}\text{C}$ -NMR spectroscopy and XRD studies of commercial and pyrolytic carbon blacks*, *Carbon*, **38**, 1279-1287.
44. Grohens, Y., Auger, M., Prud'homme, R.E., and Schultz, J., **1999**. *Adsorption of stereoregular poly(methyl methacrylates) on  $\gamma$ -alumina: Spectroscopic analysis*, *J. Polym. Sci. Polym. Phys.*, **37**, 2985-2995.
43. Picard, F., Paquet, M.J., Lévesque, J., Bélanger, A., and Auger, M., **1999**.  *$^{31}\text{P}$  NMR first spectral moment study of the partial magnetic orientation of phospholipid membranes*, *Biophys. J.*, **77**, 888-902.
42. Couture, M.M.J., Auger M., Rosell, F., Mauk, A.G., Boubour, E., Lennox, R.B., and Eltis, L.D., **1999**. *Investigation of the role of a surface patch in the self-association of *Chromatium vinosum* high potential iron-sulfur protein*, *Biochim. Biophys. Acta*, **1433**, 159-169.
41. Davis, J.H., and Auger, M., **1999**. *Static and magic angle spinning NMR of membrane peptides and proteins*, *Prog. NMR Spectrosc.*, **35**, 1-84.
40. Marsolais, F., Laviolette, M., Kakuta, Y., Negishi, M., Pedersen, L.C., Auger, M., and Varin, L., **1999**. *3'-phosphoadenosine 5'-phosphosulfate binding site of flavonol 3-sulfotransferase studied by affinity chromatography and  $^{31}\text{P}$  NMR*, *Biochemistry*, **38**, 4066-4071.

39. Laviolette, M., Auger, M., and Désilets, S., **1999**. *Monitoring the aging dynamics of glycidyl azide polyurethane by NMR relaxation times*, *Macromolecules*, 32, 1602-1610.
38. Picard, F., Buffeteau, T., Desbat, B., Auger, M., and Pézolet, M., **1999**. *Quantitative orientation measurements in thin lipid films by ATR infrared spectroscopy*, *Biophys. J.*, 76, 539-551.
37. Bouchard, M., Le Guernevé, C., and Auger, M., **1998**. *Comparison between the dynamics of lipid/gramicidin A systems in the lamellar and hexagonal phases: A solid-state NMR spectroscopy study*, *Biochim. Biophys. Acta*, 1415, 182-192.
36. Saint-Laurent, A., Boudreau, N., C.-Gaudreault, R., Poyet, P., and Auger, M., **1998**. *Interaction between lipid bilayers and a new class of antineoplastic agents derived from arylchloroethylurea: A  $^2\text{H}$  solid-state NMR study*, *Biochem. Cell Biol.*, 76, 465-471.
35. Bouchard, M., Paré, C., Dutasta, J.-P., Chauvet, J.-P., Gicquaud, C., and Auger, M., **1998**. *Interaction between G-actin and various types of liposomes: A  $^{19}\text{F}$ ,  $^{31}\text{P}$  and  $^2\text{H}$  nuclear magnetic resonance study*, *Biochemistry*, 37, 3149-3155.
34. Picard, F., Paquet, M.-J., Dufourc, E.J., and Auger, M., **1998**. *Measurement of the lateral diffusion of DPPC adsorbed on silica beads in the absence and presence of melittin: A  $^{31}\text{P}$  2D exchange solid-state NMR study*, *Biophys. J.*, 74, 857-868.
33. Auger, M., **1997**. *Membrane structure and dynamics as viewed by solid-state NMR spectroscopy*, *Biophys. Chem.*, 68, 233-241.
32. Désilets, S., Villeneuve, S., Laviolette, M., and Auger, M., **1997**.  *$^{13}\text{C}$ -NMR spectroscopy study of polyurethane obtained from azide hydroxyl terminated polymer cured with isophorone diisocyanate (IPDI)*, *J. Polym. Sci. Part A: Polym. Chem.*, 35, 2991-2998.
31. Picard, F., Alikacem, N., Guidoin, R., and Auger, M., **1997**. *Multinuclear solid-state NMR spectroscopy of envelopes from virgin and explanted silicone breast prostheses: an exploratory study*, *Magn. Reson. Med.*, 37, 11-17.
30. Bouchard, M., Boudreau, N., and Auger, M., **1996**. *Membrane fluidity response to odorants as seen by  $^2\text{H}$  NMR and infrared spectroscopy*, *Biochim. Biophys. Acta*, 1282, 233-239.
29. Picard, F., Pézolet, M., Bougis, P.E., and Auger, M., **1996**. *Model of interaction between a cardiotoxin and dimyristoylphosphatidic acid bilayers determined by solid-state  $^{31}\text{P}$  NMR spectroscopy*, *Biophys. J.*, 70, 1737-1744.
28. Gicquaud, C., Auger, M., Wong, P.T.T., Poyet, P., Boudreau, N., and Gaudreault, R.C., **1996**. *Interaction of 4-ter-butyl[(2-chloroethyl)ureido]benzene with phosphatidylcholine bilayers: A differential scanning calorimetry and infrared spectroscopy study*, *Arch. Biochem. Biophys.*, 334, 193-199.
27. Bennett, A.E., Rienstra, C.M., Auger, M., Lakshmi, K.V., and Griffin, R.G., **1995**. *Heteronuclear decoupling in rotating solids*, *J. Chem. Phys.*, 103, 6951-6958.
26. Lansbury, P.T., Costa, P.R., Griffiths, J.M., Simon, E.J., Auger, M., Halverson, K.J., Kocisko, D.A., Hendsch, Z.S., Ashburn, T.T., Spencer, R.G.S., Tidor, B., and Griffin, R.G., **1995**. *Structural model for the  $\beta$ -amyloid fibril based on interstrand alignment of an antiparallel-sheet comprising a C-terminal peptide*, *Nature Struct. Biology*, 2, 990-998.
25. Auger, M., **1995**. *Solid state NMR study of protein structure: Methods based on the measurement of internuclear distances*, *J. Chim. Phys.*, 92, 1751-1760.
24. Davis, J.H., Auger, M., and Hodges, R.S., **1995**. *High resolution  $^1\text{H}$  NMR of a transmembrane peptide*, *Biophys. J.*, 69, 1917-1932.
23. Bouchard, M., Davis, J.H., and Auger, M., **1995**. *High-speed MAS solid-state  $^1\text{H}$  NMR study of the conformation of gramicidin A in lipid bilayers*, *Biophys. J.*, 69, 1933-1938.

22. Dorne, L., Alikacem, N., Guidoin, R., and Auger, M., **1995**. *High resolution solid-state  $^{29}\text{Si}$  NMR spectroscopy of silicone gels used to fill breast prostheses*, *Mag. Reson. Med.*, 34, 548-554.
  21. Liu, J., Gagnon, Y., Furenlid, L., Gauthier, J., L'Heureux, P.J., Auger, M., Nureki, O., Yokoyama, S., and Lapointe, J., **1995**. *The zinc binding site of Escherichia coli glutamyl-tRNA synthetase is located in the acceptor binding domain. Studies by EXAFS, molecular modeling and site-directed mutagenesis*, *J. Biol. Chem.*, 270, 15162-15169.
  20. Le Guernevé, C., and Auger, M., **1995**. *New approach to study fast and slow motions in lipid bilayers: Application to DMPC-cholesterol interactions*, *Biophys. J.*, 68, 1952-1959.
  19. Griffiths, J.M., Ashburn, T.T., Auger, M., Costa, P.R., Griffin, R.G., and Lansbury Jr., P.T., **1995**. *Rotational resonance solid-state NMR elucidates a structural model of pancreatic amyloid.*, *J. Am. Chem. Soc.*, 117, 3539-3546.
  18. Dorne, L., Stroman, P., Rolland, C., Auger, M., Alikacem, N., Bronskill, M., Grondin, P., King, M.W., and Guidoin, R., **1994**. *Magnetic resonance study of virgin and explanted silicone breast prostheses: Can proton relaxation times be used to monitor their biostability*, *ASAIO J.*, 40, M625-631.
  17. Bouchard, M., and Auger, M., **1993**. *Solvent history dependence of gramicidin-lipid interactions: A Raman and FTIR spectroscopic study*, *Biophys. J.*, 65, 2484-2492.
  16. Lakshmi, K.V., Auger, M., Raap, J., Lugtenburg, J., Griffin, R.G., and Herzfeld, J., **1993**. *Internuclear distance measurement in a reaction intermediate: Solid-state  $^{13}\text{C}$  NMR rotational resonance determination of the Schiff base configuration in the M photointermediate of bacteriorhodopsin*, *J. Am. Chem. Soc.*, 115, 8515-8516.
  15. Auger, M., McDermott, A.E., Robinson, V., Castelhana, A.L., Billedeau, R., Pliura, D.H., Krantz, A., and Griffin, R.G., **1993**. *Solid state  $^{13}\text{C}$  NMR study of a transglutaminase-inhibitor adduct*, *Biochemistry*, 32, 3930-3934.
  14. Ashburn, T.T., Auger, M., and Lansbury Jr, P.T., **1992**. *The structural basis of pancreatic amyloid formation: Isotope-edited spectroscopy in the solid-state*, *J. Am. Chem. Soc.*, 114, 790-791.
  13. Spencer, R.G.S., Halverson, K.J., Auger, M., McDermott, A.E., Griffin, R.G., and Lansbury Jr., P.T., **1991**. *An unusual peptide conformation may precipitate amyloid formation in Alzheimer's disease: Application of solid-state NMR to the determination of protein secondary structure*, *Biochemistry*, 30, 10382-10387.
  12. Auger, M., Smith, I.C.P., and Jarrell, H.C., **1991**. *Slow motions in lipid bilayers: Direct detection by two-dimensional solid-state deuterium NMR*, *Biophys. J.*, 59, 31-38.
  11. Smith, I.C.P., Auger, M., and Jarrell, H.C., **1991**. *Molecular details of anesthetic-lipid interaction*, *Ann. NY Acad. Sci.*, 625, 668-684.
  10. Auger, M., Van Calsteren, M.-R., Smith, I.C.P., and Jarrell, H.C., **1990**. *Glycerolipids: Common features of molecular motion in bilayers*, *Biochemistry*, 29, 5815-821.
  9. Auger, M., Smith, I.C.P., Mantsch, H.H., and Wong, P.T.T., **1990**. *High-pressure infrared study of phosphatidylserine bilayers and their interactions with the local anesthetic tetracaine*, *Biochemistry*, 29, 2008-2015.
  8. Auger, M., and Jarrell, H.C., **1990**. *Elucidation of slow motions in glycolipid bilayers by solid-state two-dimensional deuterium NMR*, *Chem. Phys. Letters*, 165, 162-167.
  7. Auger, M., Carrier, D., Smith, I.C.P., and Jarrell, H.C., **1990**. *Elucidation of motional modes in glycolipid bilayers-  $A^2\text{H}$  NMR lineshape and relaxation study*, *J. Am. Chem. Soc.*, 112, 1373-1381.
  6. Smith, I.C.P., Auger, M., and Jarrell, H.C., **1989**. *Structure and dynamics of the glycolipid components of membrane receptors:  $^2\text{H}$  NMR provides a route to In Vivo observation*, *Ann. NY Acad. Sci.*, 568, 44-51.
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5. Auger, M., Smith, I.C.P., and Jarrell, H.C., **1989**. *Interactions of the local anesthetic tetracaine with glyceroglycolipid bilayers: A  $^2\text{H}$  NMR study*, *Biochim. Biophys. Acta*, 981, 251-257.
4. Auger, M., Jarrell, H.C., Smith, I.C.P., Siminovitch, D.J., Mantsch, H.H., and Wong, P.T.T., **1988**. *Effects of the local anesthetic tetracaine on the structural and dynamic properties of lipids in model membranes: A high-pressure Fourier transform infrared study*, *Biochemistry*, 27, 6086-6093.
3. Auger, M., Jarrell, H.C., and Smith, I.C.P., **1988**. *Interactions of the local anesthetic tetracaine with membranes containing phosphatidylcholine and cholesterol: A  $^2\text{H}$  NMR study*, *Biochemistry*, 27, 4660-4667.
2. Auger, M., Salesse, C., and Tancrède, P., **1988**. *The effects of pH on the interactions in mixed monolayers between phosphatidylserine and all-trans retinal*, *J. Colloid Interface Sc.*, 123, 1-7.
1. Auger, M., Jarrell, H.C., Smith, I.C.P., Wong, P.T.T., Siminovitch, D.J., and Mantsch, H.H., **1987**. *Pressure-induced exclusion of a local anesthetic from model and nerve membranes*, *Biochemistry*, 26, 8513-8516.

### Book Chapters

5. Ouellet, M., and Auger, M. **2006**. *Solid-state NMR studies of the interaction and structure of antimicrobial peptides in model membranes*, in "Modern Magnetic Resonance", G. Webb, Ed., Kluwer, 267-274.
4. Auger, M., **2004**. *Membranes*, in "Chemistry: Foundations and Applications", J. Lagowski, Ed., Macmillan Reference, 1, 75-76.
3. Auger, M., **2000**. *Biological membrane structure by solid-state NMR*, in "NMR in Microbiology", J.N. Barbotin and J.-C. Portais, Eds., Horizon Press, chapter 11.
2. Herzfeld, J., Auger, M., Farrar, M.R., Lakshmi, K.V., McDermott, A.E., Raap, J., Thompson, L.K., van der Wielen, C.M., Lugtenburg, J. and Griffin, R.G., **1993**. *Recent solid state NMR study of bacteriorhodopsin*, in "Frontiers of Photobiology", Shims, A., and al., Eds., 221-225.
1. Smith, I.C.P., Baenziger, J.E., Auger, M., and Jarrell, H.C., **1989**. *Deuterium NMR as a monitor of organization and dynamics at the surface of membranes: the glycolipids*, in "Biological and Synthetic Membranes", Liss, A.R., Ed., 13-22.

### Papers in Refereed Conference Proceedings

3. Paquet, M.-J., Auger, M., and Pézolet, M., **2000**. *2D-IR study of the aggregation of lipid-bound cytochrome c*, in «Two-Dimensional Correlation Spectroscopy (2DCOS)», Y. Ozaki and I. Noda, Eds., 103-108.
2. Halverson, K. J., Anderson, T., Spencer, R. G. S., Auger, M., McDermott, A. E., Griffin, R. G., and Lansbury, P. T. Jr., **1992**. *Conformational studies of the amyloid protein of Alzheimer's disease*, *Proceedings of the 12<sup>th</sup> American Peptide Symposium*, Smith, J. A. and Rivier, J. E., Eds., 203-205.
1. Auger, M., Smith, I.C.P., and Jarrell, H.C., **1988**. *NMR studies of the membrane surface and its interactions with drugs*, in «Alfred Benzon Symposium 26: NMR spectroscopy and drug development», Jaroszewski, J.W., Schaumburg, K. and Kofod, H., Eds., Munsgaard, 473-485.

### Invited Scientific Lectures

89. Pacificchem 2010, Honolulu (Hawaii), December 15-20, 2010.
88. Rock Mountain Conference on Analytic Chemistry, Snowmass (Colorado), August 1-5, 2010.
87. Dep. Chemistry and Biochemistry, University of Windsor, Windsor, November 20, 2009.
86. 92<sup>th</sup> Canadian Chemical Society Conference and Exhibition, Hamilton, June 1, 2009.
85. Faculté de chimie, Université Louis-Pasteur, Strasbourg (France), October 14, 2008.
84. 76<sup>e</sup> Congrès de l'Acfas, INRS, Québec, May 8, 2008.

83. Hospital for Sick Children, University of Toronto, Toronto, March 17, 2008.
  82. US-Canada Winter School on Biomolecular Solid State NMR, Stowe (Vermont), January 22, 2008.
  81. Cégep de Ste-Foy, Québec, November 7, 2007.
  80. AFMNet Protein & Peptide Node Meeting, University of Guelph, Guelph, August 25, 2007.
  79. 90<sup>th</sup> Canadian Chemical Society Conference and Exhibition, Winnipeg, May 28, 2007.
  78. Clara Benson Award Lecture, 90<sup>th</sup> Canadian Chemical Society Conference, Winnipeg, May 27, 2007.
  77. Second Annual Solid-State NMR Workshop, CSC Meeting, Winnipeg, May 26, 2007.
  76. Materials Techniques 2007, Inst. Materials Research, Dalhousie University, Halifax, May 8, 2007.
  75. IUPAB Scientific Meeting, National Research Council, Ottawa, September 12, 2006.
  74. 2006 FASEB Summer Research Conference, Saxtons River (Vermont), July 4, 2006.
  73. 74<sup>e</sup> Congrès de l'Acfas, Université McGill, Montréal, May 19, 2006.
  72. 2<sup>nd</sup> Annual McGill Biophysical Chemistry Symposium, McGill University, Montreal, May 16, 2006.
  71. Cégep de Ste-Foy, Québec, March 29, 2006.
  70. Pacificchem 2005, Honolulu (Hawaii), December 15, 2005.
  69. 88<sup>th</sup> Canadian Chemical Society Conference and Exhibition, Saskatoon, May 31, 2005.
  68. Department of Chemistry, Cégep de Trois-Rivières, Trois-Rivières, April 19, 2005.
  67. Conférence Grand-Public, Faculté des Sciences et de Génie, Université Laval, March 9, 2005.
  66. Department of Chemistry and Biochemistry, Concordia University, Montreal, January 14, 2005.
  65. Department of Chemistry, Université de Sherbrooke, Sherbrooke, November 17, 2004.
  64. 36<sup>th</sup> Great Lakes Regional ACS Meeting, Peoria (Illinois), October 18, 2004.
  63. 87<sup>th</sup> Canadian Chemical Society Conference and Exhibition, London, May 30, 2004.
  62. Department of Biology, University of Calgary, Calgary, September 4, 2003.
  61. XX<sup>th</sup> Int. Conference Magnetic Resonance Biological Systems, Toronto, August 28, 2002.
  60. Bruker Biospin Pre-ICMRBS Breakfast Symposium, Toronto, August 25, 2002.
  59. Canadian High Polymer Forum 2002, Château Cartier, Aylmer, August 12, 2002.
  58. 44<sup>th</sup> Rocky Mountain Conference on Analytical Chemistry, Denver (CO), July 29, 2002.
  57. Canadian Association of Physicists Meeting, Québec, June 3, 2002.
  56. Department of Chemistry, Carleton University, Ottawa, November 12, 2001.
  55. Department of Chemistry, McGill University, Montréal, October 30, 2001.
  54. Department of Chemistry, Dalhousie University, Halifax, August 10, 2001.
  53. Département de chimie, Université Laval, November 8, 2000.
  52. Biotechnology Research Institute, Montréal, April 20, 2000.
  51. 67<sup>e</sup> Congrès de l'ACFAS, Université d'Ottawa, Ottawa, May 12, 1999.
  50. Department of Chemistry, Queen's University, Kingston, October 28, 1998.
  49. BioMéga division recherche, Boehringer Ingelheim (Cda) Ltée, Laval, March 13, 1998.
  48. Centre de Recherche de l'Hôtel-Dieu de Québec, Québec, March 11, 1998.
  47. 40<sup>th</sup> CFBS Meeting, Québec, June 20, 1997.
  46. Department of Molecular Biochemistry Biophysics, Yale University, New Haven (CT), April 11, 1997.
  45. XII<sup>th</sup> International Biophysics Congress, IUPAB 1996, Amsterdam (Netherlands), August 14, 1996.
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44. Department of Solid-State NMR, Max-Planck-Institute Biochem., Martinsried (Germany), August 9, 1996.
43. Canadian NMR Summer School, NMR NEXUS 1996, Winnipeg, June 12, 1996.
42. Merck Frosst Research Center, Pointe-Claire, May 15, 1996.
41. 64<sup>e</sup> Congrès de l'ACFAS, Université McGill, Montréal, May 13, 1996.
40. PENCE, University of Toronto, Toronto, March 7, 1996.
39. Bruker 25<sup>th</sup> Anniversary Symposium, Mississauga, October 24, 1995.
38. 78<sup>th</sup> Canadian Chemical Society Conference and Exhibition, Guelph, May 28, 1995.
37. GERM XIV, Anglet-Biarritz (France), April 5, 1995.
36. Département de chimie-biologie, UQTR, Trois-Rivières, January 27, 1995.
35. Département de chimie, Université de Montréal, Montréal, November 30, 1994.
34. Physics Department, Technische Universität München, München (Allemagne), July 4, 1994.
33. Centre de Recherche Paul-Pascal, CNRS, Bordeaux (France), June 30, 1994.
32. Stéréochimie et Interactions Moléculaires, École Normale Supérieure, Lyon (France), May 26, 1994.
31. Programme de résidence en biochimie médicale, Université Laval, January 24, 1994.
30. Biochemistry and Physics Departments, Memorial University, St-Johns (NF), January 21, 1994.
29. 1<sup>st</sup> Canadian NMR Summer Institute, Waterloo, July 3, 1993.
28. 76<sup>e</sup> Congrès de la Société Canadienne de Chimie, Sherbrooke, June 2, 1993.
27. Département de physiologie et biophysique, Université de Sherbrooke, Sherbrooke, January 15, 1993.
26. Department of Chemistry, Dalhousie University, Halifax, October 30, 1992.
25. Département de chimie, Université du Québec à Montréal, Montréal, October 14, 1992.
24. 60<sup>e</sup> Congrès de l'ACFAS, Université de Montréal, Montréal, May 11, 1992.
23. 60<sup>e</sup> Congrès de l'ACFAS, Université de Montréal, Montréal, May 11, 1992.
22. 33<sup>rd</sup> ENC Conference, Pacific Grove (CA), April 1, 1992.
21. CERSIM, Université Laval, Québec, January 27, 1992.
20. Centre de recherche Paul Pascal, CNRS, Bordeaux (France), December 2, 1991.
19. Centre d'études nucléaires, CEA, Saclay (France), November 29, 1991.
18. Centre de biophysique moléculaire, CNRS, Orléans (France), November 28, 1991.
17. Laboratoire de biochimie et de technologie des protéines, INRA, Nantes (France), November 25, 1991.
16. Francis Bitter National Magnet Laboratory, MIT, Cambridge (MA), October 25, 1991.
15. Centre de recherche en photobiophysique, UQTR, Trois-Rivières, September 13, 1991.
14. 202<sup>nd</sup> American Chemical Society National Meeting, New York City (NY), August 29, 1991.
13. 12<sup>th</sup> Waterloo NMR Summer Institute, University of Waterloo, Waterloo, July 10, 1991.
12. University of Massachusetts at Amherst, Department of Chemistry, Amherst (MA), May 14, 1991.
11. McGill University, Department of Chemistry, Montréal, March 7, 1991.
10. University of Ottawa, Department of Chemistry, Ottawa, February 19, 1991.
9. National Research Council, Institute for Biological Sciences, Ottawa, February 18, 1991.
8. University of British Columbia, Department of Chemistry & Biochemistry, Vancouver, January 14, 1991.
7. University of Victoria, Department of Chemistry, Victoria, December 10, 1990.
6. University of Guelph, Physics Department, Guelph, October 30, 1990.

5. Université Laval, Département de Chimie, Québec, August 31, 1990.
4. Centre de Recherches Paul Pascal, CNRS, Bordeaux (France), June 8, 1990.
3. Francis Bitter National Magnet Laboratory, MIT, Cambridge (MA), March 8, 1990.
2. Département de Chimie-Biologie, UQTR, Trois-Rivières, February 16, 1989.
1. Université Laval, Département de Chimie, Québec, June 15, 1988.

#### Public Outreach Lectures

8. École secondaire Beurivage, St-Agapit, May 25, 2010.
7. École secondaire Pamphile-Lemay, Ste-Croix-de-Lotbinière, May 10, 2010.
6. Cégep St-Jean-sur-Richelieu, St-Jean-sur-Richelieu, May 4, 2010.
5. École secondaire Les Etchemins, Charny, April 16, 2009.
4. Les 24 heures de la chimie, Dep. Chemistry, Université Laval, Québec, March 26, 2009.
3. Mensa Society Annual Meeting, Québec, June 28, 2008.
2. Opening lecture, Finale régionale Expo-sciences Bell, Université Laval, Québec, March 13, 2008.
1. Séminaire St-Francois, St-Augustin-de-Desmaures, October 29, 2007.

#### Communications at Scientific Meetings

We have presented a total of **278** communications at scientific meetings.

#### Individual Research Grants (received, last 5 years)

- ▶ NSERC-Discovery Grant, Biophysical studies of membrane-peptide interactions and silk proteins, \$61,000/year, 2010-2015
- ▶ NSERC-Discovery Grant, Solid-state NMR studies of protein structure, protein-lipid interactions and domain formation in model membranes, \$75,000/year, 2005-2010

#### Team Grants (received, last 5 years)

- ▶ Voyer, N., Auger, M., & 4 others., NSERC-Research Tools and Instruments-Category I, Appareil pour la spectropolarimétrie de dichroïsme circulaire régulière et orientée, 93,768\$, 2010-2011
- ▶ Auger, M., & 4 others, NSERC-CIHR Collaborative Health Research Projects, Development and characterization of reconstructed psoriatic skin, 120,000\$/year, 2009-2012
- ▶ Auger, M., & 5 others, NSERC-Research Tools and Instruments-Category I, Fluorine probehead and accessories for solid-state NMR spectrometer, 132,922\$, 2009-2010
- ▶ Voyer, N., Auger, M., & Pézolet, M., NSERC-Research Tools and Instruments-Category I, Fluorescence spectrophotometer, 59,690\$, 2009-2010
- ▶ Voyer, N., Auger, M., & 27 others, FQRNT-Regroupements stratégiques, PROTEO-Le regroupement québécois de recherche sur la fonction, la structure et l'ingénierie des protéines (antérieurement CREFSIP), 275,000\$/year, 2008-2014
- ▶ Leclerc, M., Auger, M. & 40 others, FQRNT-Regroupements stratégiques, Centre québécois sur les matériaux fonctionnels (CQMF), 282,000\$/year, 2008-2011
- ▶ Voyer, N., Auger, M., & 2 others, FQRNT-Projets de Recherche en Équipe, Approche pluridisciplinaire au développement de nouveaux antimicrobiens peptidiques, \$51,500/year, 2007-2010
- ▶ Voyer, N., Auger, M., & 2 others, FQRNT-Équipements, Lyophilisateur et cabinet biologique de classe II, \$26,418, 2007-2008
- ▶ Morin, J.-F., & Auger, M., FQRNT-Projets de Recherche en Équipe, Synthèse et études dynamiques par RMN des solides de composantes moléculaires pour le développement de nanomachines, \$52,000/year, 2007-2010
- ▶ Pézolet, M., & Auger, M., Networks of Centers of Excellence, Advanced Foods and

- Materials Network, Protein and Peptide Self-Assembly: Food-Derived Materials and Interactions with Nanostructured Surfaces, \$ 40,000/year, 2006-2009
- Pézolet, M., Auger, M., & 2 others, FQRNT-Projet de Recherche en Équipe, Structure de la soie d'araignée: de la glande à la fibre, \$ 48,000/year, 2006-2009
  - Pézolet, M., Auger, M., & 2 others, FQRNT-Équipement, Accessoires de spectroscopie infrarouge, \$25,665, 2006-2007
  - Pézolet, M., Auger, M., & Salesse, C., NSERC-Research Tools and Instruments-Category I, Accessoire de spectroscopie infrarouge de réflexion totale atténuée "Golden Gate", \$25,036, 2006-2007
  - Auger, M., Pézolet, M., & Ritcey, A.M NSERC-Research Tools and Instruments-Category I, Multipurpose benchtop centrifuge, \$26,218, 2005-2006
  - Ritcey, A.M., Auger, M., & 4 others, NSERC-Research Tools and Instruments-Category I, Dynamic light scattering particle analyser, \$87,482, 2005-2006
  - Pézolet, M., & Auger, M., NSERC-Strategic Grant, Structure-property relationships in recombinant spider silk (In collaboration with Nexia Biotechnologies Inc.), \$96,000/year, 2003-2006
  - Pézolet, M., Auger, M., & 2 others, FQRNT-Projet de Recherche en Équipe, Structure de systèmes moléculaires auto-associés, \$ 60,000/year, 2003-2006
  - Pézolet, M., Auger, M., & 2 others, FQRNT-Équipement, Système Langmuir-Blodgett, \$49,955, 2003-2004
  - Voyer, N., Auger, M., & 18 others, FCAR-Regroupements Stratégiques, Centre de recherche sur la fonction, la structure et l'ingénierie des protéines, \$340,000, 2002-2007
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