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**Date of Birth:** 25, July, 1962

**Marital Status:** Married

**Citizenship:** Canadian

**Languages:** English (Native); French (Bilingual)

## RESEARCH INTERESTS

The focus of my research programme has its basis in Polymer Reaction Engineering – the application of fundamental Chemical Engineering tools to understand, quantify and control polymerisation reactions and product end-use properties. The bulk of my efforts have focused on polymerisation in dispersed media, in two main directions: the polymerisation of olefins on supported catalysts on the one hand; the production of polymeric latices on the other.

In the area of polyolefins, focus is on the fundamental understanding of heat and mass transfer in the growing catalytic particles, and more recently on a detailed study of the morphology and structural evolution of the support and polymer matrices. Work in the area of polymer latices deals with development of processes with extremely high solid content latices based on fundamental studies of particle creation and growth, the control of latex rheology, and the development of calorimetry, conductivity and other types of on-line sensors.

## EDUCATIONAL BACKGROUND

- 1997 Habilitation à diriger des recherches from the Université Claude Bernard Lyon 1, Villeurbanne, France (Chemical Reaction Engineering).
- 1985-89 Ph.D. in Chemical Engineering at the University Massachusetts, Amherst, MA., U.S.A. (Degree granted 02 February, 1990). Subject: "*The Conceptual Design of Polymerisation Processes*" under the direction of Professor Michael Malone.
- 1980-85 Bachelor of Engineering in Chemical Engineering at McMaster University, Hamilton ON, Canada.

## RELEVANT PROFESSIONAL EXPERIENCE

- 10/02 - present **Directeur de Recherche DR2** au LCPP-CNRS/ESCPE-Lyon (UMR140) (eq Full Professor)
- Direction of Polymer Reaction Engineering Group, responsible for PRE curriculum at ESCPE\*.
- 01/98 - present **Professor** at the Ecole Supérieure Chimie Physique et Electronique de Lyon
- Development of teaching and research programmes in Polymer Reaction Engineering\*.
- 03/93-12/97 **Associate research scientist** at the CNRS-LCPP/CPE
- Direction of new research group: Polymer Reaction Engineering
- 09/89-10/92 **Research Engineer** for ELF-Aquitaine International
- Project carried out for ATOCHEM in polyolefin process modelling group: heat and mass transfer on growing catalyst particles during the Ziegler catalysed polymerisation of olefins.

\* includes extensive teaching experience (in both French and English) at the graduate and undergraduate levels at the Université Claude Bernard Lyon-I, ESCPE-Lyon, and the Ecole National Supérieur de Petrole et des Moteurs (IFP Rueil-Malmaison).

## RESEARCH STATISTICS (see list in annex)

|  |                                      |
|--|--------------------------------------|
| Publications (Peer-Review, appeared/accepted): 124 | Book Chapters: 8                     |
| Conference Proceedings: 45                         | Invited Seminars and Conferences: 43 |
| Conference Presentations (Oral): 67                | PhD Theses: 17 defended; 7 underway  |
| MSc Theses: 14 defended.                           | Post Doctoral Fellows Supervised: 3  |

**TEACHING EXPERIENCE****MASTER'S LEVEL COURSES**

1. **Polymerisation Processes.** Course given for the diploma: "Advanced Technology in Polymers, Petrochemicals and Plastics," at the Ecole National Supérieure de Pétrole et des Moteurs (IFP School) Rueil-Malmaison (18-24 hours per year since 1994).
2. **Polymer Reaction Engineering.** M.Sc. Chemical Engineering, Université Claude Bernard Lyon-I (30 hours per year since 2004 ; 15 hours per year from 1996-2003; *en français*).

**UNDERGRADUATE COURSES**

3. **Polymerisation Engineering,** 2<sup>nd</sup> year students in the Combined Chemistry/Chemical Engineering Programme (equivalent 3<sup>rd</sup> Industrial Chemistry at a Canadian University) at ESCPE-Lyon (32 h per annum, 1996→ present; *en français*).
4. **Introduction to Polymer Reaction Engineering for Chemists,** 2<sup>nd</sup> year students in the Combined Chemistry/Chemical Engineering Programme (equivalent 3<sup>rd</sup> Industrial Chemistry at a Canadian University) at ESCPE-Lyon (4h per year 1996→ present).
5. **Formulation of Emulsion Polymers,** 3<sup>rd</sup> year Students in the Combined Chemistry/Chemical Engineering Programme (equivalent 4<sup>th</sup> year Industrial Chemistry at a Canadian University) at ESCPE-Lyon (4h per year 1996→ present).

**INDUSTRIAL SHORT COURSES**

6. **Polymer Reaction Engineering.** Short Courses for the Professional Education Department (*Formation Continue*) of the ESCPE-Lyon (2002, 2005)
7. **Polyolefin Reaction Engineering.** OSPT Short Course, Twente University, Enschede, Netherlands (2002 and 2003)
8. **Polyolefin Reaction Engineering** (Intensive Short Course with Profs. JBP Soares and LC Simon, U. Waterloo; C. Kiparissides, Aristotle University, Thessaloniki, Greece) June 17-19, 2005, Villeurbanne, France.
9. **Polyolefin Reaction Engineering** (Intensive Short Course with Profs. JBP Soares and LC Simon of U. Waterloo, Canada) July 10-15, 2006, Porto Alegre, Brazil.
10. **Polyolefin Reaction Engineering** (Intensive Short Course with Profs. JBP Soares and LC Simon of U. Waterloo, Canada) November 15-17, 2006, Lyon, France.
11. **Procédés de Polymérisation** (Intensive in-house short course for GRL-ARKEMA, Lacq, France) November 20-22, 2006, Lacq, France.

**ADDITIONAL PROFESSIONAL ACTIVITIES****EDITORIAL WORK**

1. Member of the International Advisory Board, Macromolecular Reaction Engineering (Wiley-VCH Verlag GmbH), beginning June 2006.
2. Member of the Editorial Board of Industrial & Engineering Chemistry Research (American Chemical Society) beginning January, 2005.
3. Member of the Editorial Board of Macromolecular Materials & Engineering (Wiley-VCH Verlag GmbH) beginning January, 2005.
4. Member of the Editorial Board of Polymer Reaction Engineering (Macrel Dekker, N.Y.) January 2001 - December 2003.
5. "Guest Editor" of Polymer **46** (2005), special issue on *Polymers in Dispersed Media PDM2004*.
6. "Guest Editor" Chemical Engineering Science **56(13)** (2001) dedicated to the European Conference on the Reaction Engineering of Polyolefins

**INTERNATIONAL PARTNERSHIPS AND PROJECTS**

1. Co-organiser (With Drs. Léonardo SIMON and Joao SOARES, University of Waterloo) of "Development of Hybrid Polyolefin-clay Nanocomposites", Fonds France Canada pour la Recherche (2004-2005).
2. Co-organiser (with Dr. Marc Dubé, University of Ottawa) of "Nanoparticles for Water-Borne Coatings and Adhesives " sponsored by the International Creative Research Initiative of the University of Ottawa (January 2003-December 2004).

3. Co-organiser (with Dr. Amilton Martins dos Santos, FAENQUIL, Universidad de Lorena, SP, Brésil) Scientific Collaboration CNRS-CNPq (Brazil) "Latex à Haut Taux de Solide: Production, suivie en ligne et mise au point de tensioactifs réactifs" (2001-2003)
4. Co-organiser (with Dr. Marc Dubé, University of Ottawa) of "High Quality Latex Dispersions," Fonds France Canada pour la Recherche (2001-2002).
5. Coordinator of a Cost-Shared Research and Technical Development project sponsored by the European Commission "Polyolefins: Improved Properties, reactor Control and Operability" (10/2001-10/2005) with DSM Research, Borealis, BP Chemicals, Fluent Europe Ltd., Repsol YPF, Aristotle University of Thessaloniki, University of the Basque Country, CNRS, Politecnico di Milano, University of Twente). Budget: 5.2 Million Euros.
6. Coordinator of a BRITE-EURAM Project sponsored by the European Commission: "The Reaction Engineering of Heterogeneously Catalysed Polymerisations". (01.02.97-30.06.2000 with 4 industrial/3 academic partners) Budget: 5.1 Million Euros/3.5 years.

#### ORGANISATION OF INTERNATIONAL CONFERENCES

1. **Properties, Monitoring and Control of Polymers and Polymerisation**, sponsored by the Centre Jacques Cartier on the occasion of the 20<sup>ième</sup> Rencontres du CJC. Date: 01-05/12/2007. (Co-Chairman with Dr. Nida SH'EIBAT OTHMAN)
2. **ECOREP III**, European Conference in the Reaction Engineering of Polyolefins, ESCPE-Lyon, Villeurbanne, France, 20-24 June, 2005 (Chairman)
3. **Polymerisation in Dispersed Media 2004**, Lyon, France, 03-08 April 2004, (Co-Chairman with Drs. Elodie BOURGEAT Lami and Hamid ELAISSARI)
4. **Modelling, Optimisation and Control of Polymer Reactors**, sponsored by the Centre Jacques Cartier on the occasion of the 16<sup>èmes</sup> Rencontres du CJC. Date: 01-03/12/2003. (Co-Chairman with Dr. Nida SH'EIBAT OTHMAN)
5. **ECOREP II**, European conference on the reaction engineering of polyolefin processes," Lyon France, 01 - 04 July, 2002. (Chairman)
6. **ECOREP**: European conference on the reaction engineering of polyolefin processes," 3-7 July, 2000, Lyon, France. (Chairman)
7. **PRE On-line** : development and use of sensors for polymerisation reactors, sponsored by the Centre Jacques Cartier on the occasion of the 11<sup>èmes</sup> Rencontres du CJC. Date: 07-09/12/98, (Chairman)

#### INTERNATIONAL CONFERENCES ADVISORY BOARD/SCIENTIFIC COMMITTEES

1. **47th Microsymposium of Prague Meetings on Macromolecules**, POLYMER COLLOIDS: FROM DESIGN TO BIOMEDICAL AND INDUSTRIAL APPLICATIONS, Prague, Czech Republic: 20-24 July 2008. Member of the International Advisory Board
2. **Polymer Reaction Engineering VI**, Halifax, Nova Scotia, Canada, May 21-26, 2006. (Technical Chairman, "Process Monitoring and Control / On-Line Sensors")
3. **Fluid Mixing 8**, London, England, 10-12 April, 2006 (Member of the Scientific Committee)
4. **MACRO 2004**, 40th IUPAC International Symposium on Macromolecules, Polymerization processes, control and monitoring, Paris, France, July 4-9, 2004 (Symposium Coordinator)
5. **Polymer Reaction Engineering V**, Québec, PQ, Canada, May 18-23, 2003. (Coordinator Poster Sessions)

#### LEARNED SOCIETIES/PROFESSIONAL ASSOCIATES

1. Chairman of the Working Party on Polymer Reaction Engineering of the European Federation of Chemical Engineering (01 Janvier 2006 – 31 décembre 2009)
2. Member of the Dutch Polymer Institute

## PUBLICATIONS (PEER REVIEW JOURNALS)

1. Malone, M.F., T.F. McKenna, "Process design for polymer production," **Foundations of Computer-Aided Process Design**, J.J. Siirola, L.E. Grossman, G. Stephanopoulos (eds), 1989.
2. McKenna, T.F., M.F. Malone, "Polymer Process Design - 1. Continuous Production of Chain Growth Homopolymers," *Comp. Chem. Eng.*, **14(10)**, 1127-49Z, 1990.
3. McKenna, T.F., D. Schweich, "Modelling of Mass and Energy Transport During the Copolymerisation of Ethylene and Butene on Ziegler-type Catalysts", **Fourth Annual Workshop on Polymer Reaction Engineering**, K.H. Reichert, H.O. Moritz (eds), VCH Berlin (1992).
4. McKenna, T.F., "Design Model of a Wiped Film Evaporator. Application to the devolatilisation of polymer melts," *Chem. Engng. Sci.*, **50(3)**, pp 453-67, (1995.)
5. McKenna, T.F., J. DuPuy, R. Spitz, "Modelling of Transfer Phenomena on Heterogeneous Ziegler Catalysts: Differences between Theory and Experiment, an Introduction." *J. Appl. Polym. Sci.*, **57**, pp. 371-84, 1995.
6. McKenna, T. F., C. Graillat, J. Guillot, "Contributions to defining the rate constants for the homo- and copolymerisation of butyl acrylate and vinyl acetate." *Polym. Bull.*, **34**, pp. 361-69 (1995).
7. Ramirez, W., T.F. McKenna, A. Guyot, "Suspension Copolymerisation of Styrene and n-Cyclohexyl Maleimide Stabilised with Polyvinyl Alcohol: Optimisation of Particle Size Distribution," *DECHEMA Monographien*, **131**, pp.281-90, (1995)
8. McKenna, T. F., H. Benamouama, R. Spitz "Mass transfer resistance in Ziegler-catalysed slurry phase polymerisation: A new look at reaction modelling," *DECHEMA Monographien*, **131**, pp.223-34, (1995)
9. McKenna, T.F., M.F. Malone, "La conception de procédés assistée par ordinateur et le rôle de l'analyse de la sensibilité dans les systèmes dits experts," *Entropie* **197**, pp. 3-16, 1996
10. Févotte, G., I. Barudio, T. F. McKenna, "Computer-Aided Parameter Estimation and On-line Monitoring of Polymerisation Reactors.," *Comp. Chem. Eng.* **20(SA)** pp. 581-586, 1996.
11. McKenna, T.F., "Computer Aided Process Design: Short-cut design for polymer production.," *Comp. Chem. Eng.*, **20(SA)** pp. 237-243, 1996.
12. McKenna, T.F., G. Févotte, C. Graillat, and J. Guillot "Joint Use of Calorimetry, Densimetry and Mathematical Modelling for Multiple Component Polymerisations," *Trans. I. Chem. E.*, **74A**, pp. 340-348, 1996.
13. McKenna, T. F., F. Barbotin, R. Spitz "Modelling of Transfer Phenomena on Heterogeneous Ziegler Catalysts: Part 2. Experimental Investigation of Intraparticle Mass Transfer Resistance During the Polymerisation of Ethylene in Slurry.," *J. Appl. Polym. Sci.*, **62**, pp. 1835-41, 1997.
14. McKenna, T. F., J. DuPuy, R. Spitz, "Modelling of Transfer Phenomena on Heterogeneous Ziegler Catalysts: Part 3. Modelling of Intraparticle Mass Transfer Resistance," *J. Appl. Polym. Sci.*, **63**, pp. 315-22, 1997
15. Chu, F., T.F. McKenna, S. Lu, "Curing Kinetics of an Acrylic Resin/Epoxy Resin System Using Dynamic Scanning Calorimetry," *Eur. Polym. J.*, **33(6)**, 837-40 (1997).
16. Santos, A.M., T.F. McKenna, J. Guillot., "Emulsion Copolymerisation of Styrene and n-Butyl Acrylate in the Presence of Acrylic and Methacrylic Acids: Effect of pH on reaction kinetics and carboxyl group distribution," *J. Appl. Polym. Sci.*, **65**, 2343-55 (1997)
17. Chu, F.X., T.F. McKenna, Y. Jiang, S. Lu, "A Study of the Preparation and Mechanism of the Ambient Temperature Curing of Acrylic Latex with Epoxy Resins", *Polymer*, **38(25)**, pp. 6157-6165 (1997)
18. McKenna, T.F., R. Spitz, *Entropie*, "Le Génie des Procédés de la Polymérisation des Oléfines: Problèmes restant à résoudre," **204**, 31-41 (1997).
19. McKenna, T.F., "Solubility and Crystallinity Data for Ethylene/Polyethylene Systems," *European Polymer journal*, **34(9)**, 1255-61 (1998).
20. Févotte, G., H. Hammouri, T. McKenna, S. Othman, "Non-linear tracking of glass transition temperatures for free radical emulsion copolymers," *Chem Engng. Sci.*, **53(4)**, 773-86 (1998).
21. Févotte, G., I Barudio, H. Hammouri, T. McKenna, S. Othman, "A New Approach to the Control of Glass Transition Temperatures of Free Radical Copolymers," *AIDIC Conference series*, **2**, pp. 51-56, 1997.
22. McKenna, T.F., A. Villanueva, "Cinétique de la polymérisation radicalaire: comportement non idéal en présence de solvant.," *Entropie*, **212/213**, 81-86 (1998)
23. Santos, A.M., G. Févotte, T. McKenna, "On-line monitoring of rapidly evolving polymerisation reactions," *Entropie*, **212/213**, 111-114 (1998)

24. Mattioli, V., C. Martin, T.F.McKenna, Phénomènes de transferts en synthèse des polyoléfines par catalyse Ziegler-Natta," *Entropie*, **212/213**, 105-110 (1998)
25. McKenna, T.F., D. Cokljat, P. Wild, "CFD Modelling of Heat Transfer during Gas Phase Olefin Polymerisation," *Comp. Chem. Eng.*, **22**, pp.S285-292 (1998)
26. Févotte, G., T.F. McKenna, S. Othman, A.M. Santos,"A combined Hardware/software sensing approach for on-line control of emulsion polymerisation processes," *Comp. Chem. Eng.*, **22**, pp.S443-450 (1998)
27. Santos, A.M., J. Guillot, T. F. McKenna, "Partitioning of styrene, butyl acrylate and methacrylic acid in emulsion systems," *Chem. Engng. Sci.*, **53**, pp. 2143-2151 (1998)
28. Févotte, G., T.F. McKenna, "Modelling of the glass transition temperature of free radical polymers: An approach for control purposes.," *Chem. Engng. Sci.*, **53**, pp. 2241-2256(1998)
29. Weickert, G., T.F. McKenna, "Pulsed Injection - Fast Reaction PIFR: A method for the investigation of mixing in bulk polymerizations," *Entropie*, **212/213**, 25-30 (1998)
30. Geerts, J.W.M.H., T. F. McKenna, "Modelling at the University: An industrial point of view," *Entropie*, **212/213**, 7-12 (1998)
31. Barudio, I., G. Févotte, T.F. McKenna, "Density data for copolymer systems:Butyl Acrylate/Vinyl Acetate Homo- and Copolymerisation in Ethyl Acetate," *European Polymer Journal*,**35**, 775-80 (1999).
32. McKenna, T. F., D. Cokljat, R. Spitz, D. Schweich, "Modelling of Heat and Mass Transfer during the Polymerisation of Olefins on Heterogeneous Ziegler Catalysts," *Catalysis Today*, **48(1-4)**, 101-108 (1999).
33. Othman, S., I. Barudio, G. Févotte, T. McKenna, "On-line Monitoring and Modelling of Free Radical Copolymerisations: Butyl Acrylate and Vinyl Acetate," *Polym. React. Engng.* **7(1)**, 1-42,1999
34. McKenna, T. F., A. Villanueva, A.M. Santos,"Effect of Solvent on the Rate constants in Solution Polymerisation. Part I: Butyl Acrylate," *J. Polym. Sci., Part A: Polym. Chem.*,**37(5)**, 571-588 (1999).
35. McKenna, T. F., A. Villanueva "Effect of Solvent on the Rate constants in Solution Polymerisation. Part II: Vinyl Acetate," *J. Polym. Sci., Part A: Polym. Chem.*,**37(5)**, 589-601 (1999).
36. Fortuny, M., T.F. McKenna,"Effect of Solvent on the Rate constants in Solution Polymerisation. Part III: Copolymerisation," *Polymer Journal*, **31(1)**, 7-12 (1999).
37. McKenna, T.F. S. Othman, G. Févotte, A.M. Santos, H. Hammouri, "Integrated approach to monitoring, state estimation and control of polymer reactors," 6th International Workshop on Polymer Reaction Engineering, DECHEMA Monographien, Vol. 134, 567-576, 1998, Wiley-VCH, Berlin.
38. Hammouri, H., T.F. McKenna, S. Othman, "Applications of non-linear observers and control: Improving Productivity and Control of Free Radical Solution Copolymerisation," *Ind. Eng. Chem. Res.*, **38(12)**, 4815 (1999)
39. McKenna, T. F., Davor Cokljat, Roger Spitz, "Heat Transfer from Heterogeneous Catalysts: An Exploration of underlying Mechanisms using CFD.," *AIChE J*, 45(11), 2392-2410 (1999).
40. Fortuny Heredia, M., M. Schneider, C. Graillat, T. McKenna "A new look at kinetics and stabilisation phenomena in emulsion polymerisation," *Macromol. Chem., Macromol. Symp.*, **150**, 95-100 (2000)
41. Renard, B., T.F. McKenna, "Kinetics of Polymerisation of Partially Neutralised Acrylic Acid in INVERSE Suspensions," *Macromol. Chem., Macromol. Symp.*, **150**, 251-258 (2000)
42. Santos, A.M., G. Févotte, N. Othman, S. Othman, T.F. McKenna, "The on-line monitoring of methyl methacrylate - vinyl acetate emulsion copolymerisation," *J. Appl. Polym. Sci.*, **75**, 1667-1683 (2000).
43. Févotte., G., T. F. McKenna," Reconstruction of histograms of the glass transition temperature of free radical copolymers from DSC thermograms," *J.Appl. Polym. Sci.*, **76**, 357-367 (2000).
44. Guinot, P., N. Othman, G. Févotte, T.F. McKenna "On-line monitoring of emulsion copolymerisations using hardware sensors and calorimetry," *Polymer Reaction Engineering*, 8(2), 115-134 (2000)
45. McKenna, T.F., S. Othman, G. Févotte, A.M. Santos, H. Hammouri, "An integrated approach to polymer reaction engineering: a Review of Calorimetry and State Estimation," *Polymer Reaction Engineering*, **8**, 1-38 (2000).
46. Othman, N., A.M. Santos, G. Févotte, T. McKenna, "Evaluation of emulsion polymerisation kinetics using a non-linear state estimator," *Macromol. Chem., Macromol. Symp.*, **150**, 109-114 (2000)
47. Santos, A.M., G. Févotte, N. Othman, S. Othman, T.F. McKenna,"The on-line monitoring of methyl methacrylate-vinyl acetate emulsion copolymerisation," *Macromol. Chem., Macromol. Symp.*, **150**, 115-120 (2000).
48. Kabore, P., S. Othman, T.F. McKenna, H. Hammouri,"Observer-based fault diagnosis for a class of nonlinear systems-Application to a free radical copolymerisation reaction," *International Journal of Control* **79(9)**, 787-803 (2000).

49. Kittilsen, P., T.F. McKenna "A Study of the Kinetics, Mass Transfer and Particle Morphology in the Production of High Impact Polypropylene," *J. Appl. Polym. Sci.*, 82(5), 1047-1060 (2001).
50. Kittilsen, P., H. Svendsen, T.F. McKenna, "Modelling of Transfer Phenomena on Heterogeneous Ziegler Catalysts: Part 4. Convection effects in gas phase processes," *Chem. Eng. Sci.*, 56(13), 3997-4005 (2001)
51. McKenna, T.F., C. Kiparissides, G. Weickert, G. Storti, "Results of the CATAPOL Project: Advances in studies on single catalyst/polymer particles for polyolefins," *Dechema Monographien*, **137**, 345-352 (2001)
52. Kittilsen, P., T.F. McKenna, H. Svendsen, H.A. Jakobsen, S. Fredrisken, "The interaction between mass transfer effects and morphology in heterogeneous olefin polymerization," *Chem. Eng. Sci.*, 56(13), 4015-28 (2001)
53. McKenna, T.F., Soares, J.B.P. "Single particle modelling for polyolefins: A review," *Chem. Eng. Sci.*, 56(13), 3931-3949 (2001)
54. Ouzineb, K., C. Graillat, T.F. McKenna, "Continuous tubular reactor as a seed reactor in miniemulsion polymerisation," *Dechema Monographien*, **137**, 293-302, (2001)
55. Ouzineb, K., M. Fortuny, M. Schneider, C. Graillat, T.F. McKenna, "Stabilisation and kinetics in the emulsion copolymerisation of butyl acrylate and methyl methacrylate," *J. Polym. Sci., Part A. Polym. Chem.*, 39(16) 2832-2846 (2001).
56. Othman, N., G. Févotte, T.F. McKenna, "On-line monitoring of emulsion terpolymerization processes," *Polymer Reaction Engineering*, 9(4), 271-296 (2001).
57. McKenna, T.F., V. Mattioli, "Progress in Describing Particle Growth for Polyolefins: a look at particle morphology," *Macromol. Symp.* **173**, 149-162 (2001).
58. Santos, A., F. Bentes-Freire, S. Ben Amor, J.C. Pinto, R. Giudici, T.F. McKenna, "On-line monitoring of emulsion polymerisation: conductivity and "cascade" calorimetry," *Dechema Monographien*, **137**, 609-616 (2001).
59. Santos, A.F., A. Cherfi, T. McKenna, G. Seytre, E.L. Lima, J.C. Pinto and G. Févotte, "In-Line Dielectric Monitoring of MMA/BuA Copolymerization Reactions," *Chimia*, 55, 3, 251-253 (2001).
60. Schneider, M., I. Betrémieux, A. Guyot, T.F. McKenna, "High Solids Content Emulsions: Product Development and Rheological Characterisation," *Dechema Monographien* **137**, 617-624 (2001)
61. Schneider, M., C. Graillat, S. Boutti, T.F. McKenna, "Decomposition of APS and H<sub>2</sub>O<sub>2</sub> for Emulsion Polymerisation," *Polymer Bulletin*, **47**, 269-275 (2001).
62. McKenna, T.F., R. Spitz, "Activity Limits of Heterogeneous Catalysts," in *Organometallic Catalysts and Olefin Polymerization: Catalysts for a new Millenium*, Blom, R., Follestad, A., Rytter, E., Tilstet, M., Ystenes, M. Eds, Springer-Verlag, Berlin, 2001, p.377-386.
63. Astorga, C., N. Othman, S. Othman, T. F. McKenna, H. Hammouri, "A continous discrete observer for nonlinear systems. Application to emulsion polymerization reactors," *Control Engineering Practice*, **10**, 3-13 (2002).
64. Othman, N., A. Santos, G. Févotte, T.F. McKenna, "Monitoring of emulsion polymerisations: A study of reaction kinetics in the presence of secondary nucleation," *Canadian J. Chem. Eng.*, 80(1), 88-104 (2002).
65. Guyot, A., F.X. Chu, M. Schneider, T.F. McKenna "High Solids Content Latexes," *Prog. Polym. Sci.*, **27**, 1573-1615 (2002).
66. Martin, C., T.F. McKenna, "Particle Morphology and Transport Phenomena in Olefin Polymerisation," *Chem. Eng. J.*, **87**, 89-99 (2002)
67. Schneider, M., T.F. McKenna, "Comparative Study of Methods for the Measurement of Particle Size and Size Distribution of Polymeric Emulsions.," *Part. Part. Syst. Charact.* 19(1) 28-37 (2002)
68. Schneider, M., J. Claverie, A. Guyot T.F. McKenna, "High Solids Content Emulsions. Part I: A study of the influence of the particle size distribution and polymer concentration on viscosity," *J. Appl. Polym. Sci.*, **84**(10), 1878-1896 (2002)
69. Schneider, M., C. Graillat, A. Guyot T.F. McKenna, "High Solids Content Emulsions. Part II: Preparation of Seed Latexes," *J. Appl. Polym. Sci.*, **84**(10), 1897-1915 (2002).
70. Schneider, M., C. Graillat, A. Guyot T.F. McKenna, "High Solids Content Emulsions. Part III: Synthesis of Concentrated Latexes via Classic Emulsion Polymerisation," *J. Appl. Polym. Sci.*, **84**(10), 1916-1934 (2002).
71. Schneider, M., C. Graillat, I. Betrémieux, A. Guyot, T.F. McKenna, "High Solids Content Emulsions. Part IV: Improved Strategies for Producing Concentrated Latexes," *J. Appl. Polym. Sci.*, **84**(10), 1935-1948 (2002).

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73. Mattioli, V., Découvelaere, B., T.F. McKenna, "Study of Capillary Effects during Olefin Polymerisation on Supported Catalysts" *Polymer Reaction Engineering*, **10**(3), 163-180 (2002).
74. Ben Amor, S., D. Colombié, T.F. McKenna, "On-line monitoring of emulsion polymerization using calorimetry" *Ind. Eng. Chem. Res.*, **41**, 4233-4241 (2002).
75. Cherfi, A., A. F. Santos, J.C. Pinto, G. Seytre, G.Boiteux, T.F. McKenna, G. Fevotte, "Application of Dielectric Analysis to the Measurement of Conversion during Batch Solution Copolymerizations," *Chem. Engng. & Processing*. **42**, 2, 121-128. (2002).
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77. Kittilsen, P., H. Svendsen, T.F. McKenna, " A viscoelastic single particle model of particle fragmentation during olefin polymerization on supported catalysts" *AIChE J.*, **49**(6), 1495-1507 (2003)
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#### **Publications Under Review**

1. G.P. Santos, C. Martins, M. Fortuny, A.F. Santos, M. Turmine, C. Graillat, T.F.L. McKenna, "In-Line and In-Situ Monitoring of Ionic Surfactant Dynamics in Latex Reactors Using Conductivity Measurements and Ion-Selective Electrodes," (submitted *Ind. Eng. Chem. Res.*)
2. F. Machado, T.F.L. McKenna, E.L. Lima, J.C. Pinto, In-Situ Preparation of Polypropylene / 1-Butene Alloys Using a MgCl<sub>2</sub>-Supported Ziegler-Natta Catalyst (submitted *Polym. Eng. Sci.*)
3. A. Di Martino, G. Weickert, F. Sidoroff, T.F.L. McKenna, "Modelling of induced tension in a growing catalyst/polyolefin particle: A multi-scale approach for simplified morphology modelling," (Submitted *Macromol. Reac. Engng.*)

#### **PUBLICATIONS (BOOK CHAPTERS)**

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4. McKenna, T.F., D. Schweich, "Réacteurs de polymérisation," Chapitre 13 dans *Génie de la Réaction Chimique*, D. Schweich (ed), 2001, Lavoisier, Paris
5. Guyot, A., M. Schneider, T.F. McKenna, "Characterisation of Polymer Colloids," Chapter 2 in *Microspheres, Microcapsules and Liposomes*, Vol. 4: Functional Polymer Colloids, A. Guyot et A. Arshady (eds), Citus Books, London, UK, 2002.
6. McKenna, T.F., M. Schneider, " Procédés de production de latex à haut taux de solide," Chapitre 30, 809-832, dans « Les latex synthétiques », Ch. Pichot et J.C. Daniel, eds., Lavoisier: Editions Tec & Doc, Paris 2006.
7. McKenna, T.F., N. Othman, " Suivi et commande de réacteurs de polymérisation en émulsion," Chapitre 27, p727-758, dans « Les latex synthétiques », Ch. Pichot et J.C. Daniel, eds., Lavoisier: Editions Tec & Doc, Paris 2006.
8. Soares, J.B.P., T.F.L. McKenna, C.P. Cheng, "Coordination Polymerisation", Chapitre 2 dans "Polymer Reaction Engineering," J.M. Asua (Ed), Blackwell (to appear)

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1. "Procédé de Fabrication de Polyester," Gantillon, B., J.-L. LePage, T.F. McKenna, V. Pasquet, R. Spitz, European Patent 99 973044.3-2102.

## PRESENTATIONS AND CONFERENCES

### Invited Presentations and Seminars

1. "Transport phenomena during the catalysed polymerisation of olefins," Invited Seminar, University of Twente, Enschede, Pays Bas, Decembre, 1994.
2. "State of the art in the modelling of heat and mass transfer during the gas and slurry polymerisation of olefins," Invited Seminar, U. Twente, Enschede, Pays Bas, 15 Déc., 1998
3. "Modelling of heat transfer on polymerising particles: an overview with CFD," Invited Seminar, Exxon Chemicals, Baytown Texas, 14 March, 1999.
4. "Applications of Non-linear State Estimators in Free Radical Polymerisation," Invited Seminar, University of Sao Paulo, SP, Brazil, June 11, 1999.
5. "Recent Developments in Heat and Mass Transfer during the Polymerisation of Olefins," Invited Seminar, Faculdade de Engenharia Quimica de Lorena, Lorena/SP, Brazil, June 14 1999.
6. "Future directions for research in polyolefins," T.F. McKenna, Invited Seminar, Targor GmbH, Ludwigshafen, Allemagne, 03 Feb., 2000.
7. "Reaction Engineering Aspects of Polyolefins," T F. McKenna, Virginie Mattioli, Christine Martin, Pål Kittilsen, Invited Conference, Polymer Reaction Engineering IV, Palm Coast, Florida, March 19-24, 2000.
8. "Progress and Challenges in the study of Heat and Mass Transfer during the Production of Polyolefins," T.F. McKenna, Invited Conference, Group on Reactor Technology in Petrochemistry and Polymer Industry, SINTEF, NTNU Gloschaugen, Trondheim, Norvège, 6-7 April 2000.
9. "Modelling Transfer Phenomena in Heterogeneous Catalysts for Polyolefins," Invited Conference, Conference on Insertion Polymerization at BASF Aktiengesellschaft, Ludwigshafen, Sept. 28-29, 2000.
10. "Heat and Mass Transfer during Olefin Polymerisation," Invited Seminar, University of Western Ontario, 2 October, 2000.
11. "Improved Models for Mass Transfer in Heterogeneous Catalysts," Invited Seminar, Queen's University, Kingston, Ontario, Canada, 10 October, 2000.
12. "Improved Particle Growth Models for Olefin Polymers," Invited Seminar, ExxonMobil Chemicals, Baytown, Texas, 5 January, 2001.
13. "Progress and Challenges in Describing Particle Growth for Polyolefins," Invited Conference, NASCRE: *North American Symposium on Chemical Reaction Engineering*, Houston, TX, 8 January 2001.
14. "Vers une meilleure modélisation de la croissance des particules pendant la polymérisation des olefines," Invited Seminar, Centre de Recherche Fina, 9 Fev., 2001.
15. "Production of High Solids Content, Low Viscosity Latex for Pressure Sensitive Adhesives," Invited Conference, Statoil, Trondheim, Norway, 24 April, 2001.
16. "Modeling of Particle Growth, Fragmentation and final Morphology", Invited Seminar, BP Chimie, Lavéra, France, 21 September, 2001.
17. "Modelling of particle growth in olefin polymerisation," Invited Conference, Leuven Summer School on Catalysis, Ostend, Belgique, 11-14 November, 2001
18. "Comment fabriquer des latex à haut taux de solide et à faible viscosité," Invited Conference, EUROFORUM *Latex synthétiques et artificiels – Propriétés, Applications et Innovations*, 4-5 December, 2001.
19. "Nouveau Modèle pour la croissance des particules pendant la polymérisation des oléfines," Invited Conference, Journée Thématique de la Fédération des Polyméristes Lyonnais, Lyon, France, 28 November 2002.
20. "High Solids Content Latexes," Invited Conference, Gordon Research Conference on Polymer Colloids, 30/06/2003-04/07/2003, Tilton, NH, Etats-Unis.
21. "Latex production via emulsions and miniemulsions," University of Ottawa Research Seminar, 16 May, 2003, Department of Chemical Engineering, University of Ottawa, Ottawa, Canada.

22. "Génie de la polymérisation en milieu divisé," Invited Seminar, Rhodia Recherches, Aubervilliers, France, 13 February, 2003.
23. "Polymer Reaction Engineering: What is it? Why Bother? A "Forest Talk"," Invited Seminar, Universidad Politecnico de Madrid, 3 March, 2004, Madrid, Spain
24. "Toward a Morphological Model of Polyolefin Particle Growth," Invited Conference, METCON 4, Houston, Texas, 14 May, 2004.
25. "Dynamic Simulation of Particle Formation in Batch Emulsion Polymerization: A New Nucleation Profile," Invited Seminar, University of Porto, 24 May, 2004, Porto, Portugal
26. "High Solid Content Latices," Invited Seminar, Instituto Superior Tecnico, 25 May, 2004, Lisbon, Portugal
27. "Use of conductivity measurements to monitor particle formation in emulsions," Invited Conference, 40<sup>th</sup> World Polymer Congress/IUPAC, 04/07-09/07/2004, Paris, France.
28. "Applications de CFD en génie de la polymérisation: Quelques exemples et beaucoup d'ouvertures...," Invited Seminar, Journée SFGP sur l'application des MFN aux Réacteurs, mardi 28 September 2004, Tour Total, Paris, France
29. "The Morphology of Polyolefin Particles," Invited Presentation, Borealis OY, Porvoo, Finland, October 7, 2004.
30. "Improvements in the production of high impact polypropylene," Invited Presentation, Borealis OY, Porvoo, Finland, October 7, 2004.
31. "Dynamic Simulation of Particle Formation in Batch Emulsion Polymerization: A New Nucleation Profile," Invited Seminar, Queen's University, Kingston, Ontario, Canada, 20 October, 2004.
32. "Miniemulsion Polymerisation: A look at fundamentals, static mixing and some interesting (potential) end-uses," Invited Seminar at Xerox Research Centre of Canada, Mississauga, Canada, 22 October, 2004.
33. "Polyolefin Research at the LCPP: Single particle growth and morphology," Invited Seminar, SABIC Europetrochemicals, Geleen, Pays Bas, 16 March, 2005.
34. "Study of Impact copolymer particle growth," Invited Seminar, SABIC Europetrochemicals, Geleen, Pays Bas, 16 March, 2005.
35. "Single particle growth and morphology for polyolefins," Invited Seminar, Japan Advanced Institute for Science and Technology, Nomi, Ishikawa, 923-1292, Japan, 28 March, 2005
36. "A look at fundamentals, static mixing and some interesting (potential) end-uses of miniemulsion polymerization," Invited Seminar, LGC, Toulouse, 8 April, 2005
37. "Polyolefin Reaction Engineering: Fundamental Particle Level Research," Invited Seminar, Innovene NOH, Bruxelles, Belgique, 21 April 2005.
38. "Study of Impact Copolymer Growth," Invited Seminar, BCC-SINOPEC, Beijing, China, 2 September, 2005.
39. "Recent Advances in Emulsion Polymerisation," Chinese Academy of Forestry, Nanjing, 5 September, 2005.
40. "Single Particle Growth and Morphology Modelling for Polyolefins," Zhe Jiang University, Hangzhou, China, 8 September 2005.
41. "High Solid Content Latexes: Process development via experiments supported by modelling," Invited Conference, CHEMPOR 9, Coimbra, Portugal, 21-23 September 2005.
42. "Challenges in Polymerisation in Dispersed Media," 16 November, 2005, Department of Chemical Engineering, Heriot Watt University, Edinburgh, Scotland.
43. "High Solid Content Latex Systems," World Polymer Congress, 41<sup>st</sup> International Symposium on Macromolecules (IUPAC MACRO 2006), 16-21 July 2006, Rio de Janeiro, Brazil.

#### CONFERENCES: ORAL PRESENTATIONS

1. **McKenna, T.F.**, M.F. Malone, "A systematic procedure for the design of polymer production processes," AIChE National Meeting, Washington D.C., Dec., 1988.
2. **McKenna, T.F.**, "Conception des Procédés de Polymerisation" Stage de Perfectionnement, Centre de Perfectionnement des Industries Chimiques, ENSIC, Nancy, 1991,
3. **McKenna, T.F.**, D. Schweich, "Copolymerisation of olefins on Ziegler-type catalysts: Heat and mass transfer during particle growth," 4th International Workshop on Polymer Reaction Engineering, Berlin, 13 October, 1992.
4. McKenna, T.F., M.F. Malone, "Process design for polymer production," Foundations of Computer-Aided Process Design, Snowmass CO, July, 1989.

5. **McKenna, T.F.**, "Conception des Procédés de Polymérisation," ESCPE, March, 1993
6. **McKenna, T.F.**, "Modelling of Transport Phenomena in Ziegler-type Catalysts: Olefin Polymerisation. Differences between Observations and Model Predictions," 2nd Meeting of European Federation of Chemical Engineering Working Party on Polymer Reaction Engineering, Loughborough, U.K., Sept. 14-15, 1994.
7. **R. Spitz, J. DuPuy, J.P. Broyer, T. McKenna**, "Diffusion effects in Olefin Polymerisation: Reconciliation of theory and experiment." *International Symposium on Synthetic, Structural and Industrial Aspects of Stereospecific Polymerisation* Milano, Italy, June 6-10, 1994.
8. **McKenna, T.F.**, B. Billy, "Use of membranes in the generation of monodisperse particles in suspension polymerisation," 3<sup>rd</sup> Meeting of European Federation of Chemical Engineering Working Party on Polymer Reaction Engineering, Sitges, Spain, 6-7 May, 1995)
9. **McKenna, T.F.**, "Modèle simplifié d'un évaporateur à film raclé: Equipement pour l'élimination des résidus volatils d'un polymère fondu," V<sup>ième</sup> Congrès du Groupe Français du Génie des Procédés, 19-21 September, 1995.
10. **McKenna, T.F.**, S. Othman, G. Févotte, H. Hammouri, "Contrôle en ligne d'un réacteur de polymérisation," V<sup>ième</sup> Congrès du Groupe Français du Génie des Procédés, 19-21 September, 1995.
11. **McKenna, T.F.**, "Aspects du transfert d'énergie pendant la polymérisation des oléfines ," V<sup>ième</sup> Congrès du Groupe Français du Génie des Procédés, 19-21 September, 1995.
12. **McKenna, T.F.**, F. Barbotin, R. Spitz, "Transfert de Matière en Catalyse Ziegler: Exploration des limitations diffusionnelles de la polymérisation d'éthylène en suspension," Réunion du G.F.P., Nancy, 21-23 Nov., 1995.
13. **McKenna, T.F.**, B. Billy, "Control of Droplet Size in Suspension Polymerisation: A Novel method for Eliminating the Influence of Mixing Conditions, " 4th Meeting of European Federation of Chemical Engineering Working Party on Polymer Reaction Engineering, Thessaloniki, Greece, Sept. 21-22, 1996.
14. **McKenna, T.F.**, "Advances in Modelling of Heat and Mass Transfer: Polymerisation of Olefins on Highly Active Ziegler-Natta Catalysts," 4th Meeting of European Federation of Chemical Engineering Working Party on Polymer Reaction Engineering, Thessaloniki, Greece, Sept. 21-22, 1996.
15. **McKenna, T.F.**, "Computer Aided Process Design: Short-cut design for polymer production.," ESCAPE-6, Rhodes, Greece, May, 1996.
16. G. Févotte, I. Barudio, H. Hammouri, **McKenna, T.**, S. Othman, "A New Approach to the Control of Glass Transition Temperatures of Free Radical Copolymers," ECCE Conference, Florence, Italy, May 4-7, 1997.
17. **McKenna, T.F.**, "Polymer Reaction Engineering in Lyon: A general overview," 5<sup>th</sup> Working Party on Polymer Reaction Engineering, Lyon, France, 5-7 September, 1997
18. **McKenna, T.F.**, A. Villanueva "Non-ideal Kinetic Behaviour of Free Radical Polymerisation," 5<sup>th</sup> Working Party on Polymer Reaction Engineering, Lyon, France, 5-7 September, 1997
19. **McKenna, T.F.**, D. Cokljat, R. Spitz, D. Schweich, "Modelling of Heat and Mass Transfer during the Polymerisation of Olefins on Heterogeneous Ziegler Catalysts," 2nd International Symposium on Catalysis in Multiphase Reactors, 16-18 March, 1998, Toulouse, France.
20. **McKenna, T.F.**, P. Wild, D. Cokljat, "CFD Modelling of Heat Transfer during Gas Phase Olefin Polymerisation," ESCAPE-8, Brugge, Belgium, 24-27 May, 1998.
21. **McKenna, T.F.**, S. Othman, G. Févotte, A.M. Santos, H. Hammouri, "Integrated approach to monitoring, state estimation and control of polymer reactors," 6th International Workshop on Polymer Reaction Engineering, Berlin. Germany, October 5-7, 1998.
22. Othman, N., A.M. Santos, G. Févotte, **T.F. McKenna**, "Estimation non linéaire pour le suivi de la cinétique de la polymérisation en émulsion," Club Emulsion, Nancy, France, Oct. 26-27, 1998.
23. **McKenna, T.F.**, H. Hammouri, "Applications de la calorimétrie est des estimateurs non-linéaire à la polymérisation radicalaire," 11èmes Recontres Jacques Cartier: Le Génie de la Polymérisation en Ligne, Lyon France 7-9 Déc. 1998.
24. G. Févotte, T. McKenna, S. Othman, A.M. Santos "A combined Hardware/software sensing approach for on-line control of emulsion polymerisation processes," ESCAPE-8, Brugge, Belgium, 24-27 May, 1998.
25. **McKenna, T.F.**, S. Othman, N. Othman, G. Févotte, Ph. Guinot, H. Hammouri, "Non-linear state estimators for polymer reactors." Paper 77f, 3rd Annual Polymer Producers Conference AIChE Spring Meeting, Houston, TX, March 14-18, 1999.

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27. Santos, A.M., N. Othman, G. Févotte, **T. F McKenna**, "Experimental evaluation of free radical emulsion polymerisation using a non-linear state estimator: Evaluation in on-line conditions," Polymerisation in Dispersed Media, Lyon, France, 12-15 April, 1999.
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30. Martin, C., C. Novat, T.F. McKenna, "An Experimental Investigation of the Morphology of Polyolefin Particles," ECOREP Conference, Lyon, France, July 3-6 (2000).
31. Martin, C., T.F. McKenna, "Inverse Gas Chromatography for Characterisation of Polyolefins: Exploration of Solubility, Diffusion and Particle Morphology," ECOREP Conference, Lyon, France, July 3-6 (2000).
32. Ouzineb, K., C. Graillat, T.F. McKenna, "Study of the continuous emulsion polymerisation of butyl acrylate and methyl methacrylate," Working Party on Polymer Reaction Engineering, Lausanne, Suisse, 21-22 October, 2000.
33. Santos, A. F., A. Cherfi, T. McKenna, G. Seytre, J.C. Pinto, G. Févotte, "In-Line Dielectric Monitoring of MMA/BuA Copolymerization Reactions," Working Party on Polymer Reaction Engineering, Lausanne, Suisse, 21-22 October, 2000.
34. P. Kittilsen, H. Svendsen, H.A. Jakobsen, T.F. McKenna & S.B. Fredriksen, "The effect of initial conditions on morphology in heterogeneous olefin polymerization," poster at International symposium on future technologies for polyolefin and olefin polymerization catalysis, Tokyo Institute of Technology, Japan, 21-24 March 2001.
35. Fortuny-Heredia, M., C. Graillat, T.F. McKenna, "Experimental modeling of monomer partitioning in emulsion systems," Poster presentation at the Gordon Research Conference on Polymer Colloids, July 1-6, 2001 Tilton, NH, USA.
36. Schneider, M., I. Bétrémieux, A. Guyot, C. Graillat, T. McKenna, "Product development and rheology of high solids content latexes," Poster presentation at the Gordon Research Conference on Polymer Colloids, July 1-6, 2001 Tilton, NH, USA.

37. T.F. McKenna, C. Kiparissides, G. Weickert, G. Storti, "Results of the CATAPOL project: I. Single Particle Growth and Modelling," poster accepted for presentation at the 7th International Workshop on Polymer Reaction Engineering, Hamburg, Germany, 8-10 October, 2001.
38. Santos, A.F., F. Bentes Freire, J.C. Pinto, R. Giudici, C. Graillat, T.F. McKenna, "On-line Monitoring of Emulsion Polymerisations: Conductivity and Real Time Calorimetry," poster accepted for presentation at the 7<sup>th</sup> International Workshop on Polymer Reaction Engineering, Hamburg, Germany, 8-10 October, 2001.
39. Schneider, M., I. Bétrémieux, A. Guyot, T.F. McKenna, "High Solids Content Emulsions: Product Development and Rheological Characterisation," poster accepted for presentation at the 7<sup>th</sup> International Workshop on Polymer Reaction Engineering, Hamburg, Germany, 8-10 October, 2001.
40. Le Sauze, N., Ouzineb, K., Ricard, A., McKenna, T., Xuereb, C., Apport des mélangeurs statiques lors d'une polymérisation en émulsion réalisée dans un réacteur en boucle," 8<sup>ème</sup> Congrès Francophone du Génie des Procédés, 17-19 October, 2001.
41. Di Martino, A., T.F. McKenna, "Future Developments in the Tension Model: Toward a realistic model of particle fragmentation and growth" ECOREP II, 1-4 July, 2002, Lyon, France.
42. Bouzid, D., T.F. McKenna, " A preliminary study of the Morphology of impact copolymers," ECOREP II, 1-4 July, 2002, Lyon, France.
43. Eriksson, E., D. Cokljat, T.F. McKenna, "Heat transfer Modelling using CFD," ECOREP II, 1-4 July, 2002, Lyon, France.
44. Ouzineb, K., R. Jovanovic, M., Dubé, C. Graillat, T. McKenna, "Applications de la mini-Emulsion: Manipulation des masses molaires et synthèse de latex à haut taux de solides," Journées Club Emulsion, XXIème réunion du Club Emulsion, Arc et Senans, 14 et 15 October, 2002.
45. Santos, A.F., J.C. Pinto, C. Graillat, T.F. McKenna La mesure de  $N_p$  avec la conductimétrie, Journées Club Emulsion, XXIème réunion du Club Emulsion, Arc et Senans, 14 et 15 October, 2002
46. Ouzineb, K., C. Graillat, M. Dubé, R. Jovanovic, T.F. McKenna, " Compartmentalization in Miniemulsion Polymerization." Poster Presentation at Polymer Reaction Engineering V, 18-23 May 2003, Québec, Canada
47. Fortuny, M., C. Graillat, T.F. McKenna, " Particle coagulation during nucleation: experimental and modelling study." Polymer Reaction Engineering V, 18-23 May 2003, Québec, Canada.
48. Jovanovic, R., McKenna, T.F., Dubé, M.A., *Poster*: Structure-Property Relationships of BA/VAc/AA-Based Pressure Sensitive Adhesives, Polymer Reaction Engineering V, Québec City, QC, May 18-23, 2003
49. Santos, A.F., E.L. Lima, J.C. Pinto, C. Graillat, T.F. McKenna, "On-line monitoring of emulsion polymerisation using conductivity measurements," Polymer Reaction Engineering V, 18-23 May 2003, Québec, Canada
50. Bouzid, D., T.F. McKenna, "Evolution of particle morphology during the production of high impact polypropylene," Polymer Reaction Engineering V, 18-23 May 2003, Québec, Canada
51. Boutti, S., C. Graillat, T.F. McKenna, "New routes to high solids content latexes: A process for in situ particle nucleation and growth," Polymer Reaction Engineering V, 18-23 May 2003, Québec, Canada
52. Jovanovic, R., McKenna, T.F., Dubé, M.A., A Constrained Mixture Design for Modeling Pressure Sensitive Adhesive Performance, 53rd Can. Chem. Eng. Conf., Hamilton, ON, Oct. 26-29, 2003
53. McKenna, T.F., Ouzineb, K., Dubé, M.A., Jovanovic, R., Hua, H., Compartmentalisation in Miniemulsion Polymerisation: Fundamental Study and Potential Applications, 53rd Can. Chem. Eng. Conf., Hamilton, ON, Oct. 26-29, 2003
54. Jovanovic, R., McKenna, T.F., Dubé, M.A., *Poster*: Modeling the Final Properties of Emulsion-Based Pressure Sensitive Adhesives, Gordon Conference: Polymer Colloids, Tilton, NH, U.S.A., June 29-July 4, 2003.
55. Eriksson, E., T.F. McKenna, *Poster*: CFD Modelling of Heat Transfer in Gas Phase Polyolefin Polymerisation, Polymer Reaction Engineering: Modelling, Optimisation and Control, 16èmes Entretiens Jacques Cartier, Lyon, France, 1-3 Decembre, 2003.
56. Farshchi, F., Graillat, C., Othman, S., Hammouri, H., McKenna, T.F., "On-line monitoring and modelling of emulsion polymerisation of butyl acrylate using conductimetry," Polymer Reaction Engineering: Modelling, Optimisation and Control, 16èmes Entretiens Jacques Cartier, Lyon, France, 1-3 Decembre, 2003.
57. Vale, H., T.F. McKenna, "Dynamic Modeling of the Seeded Emulsion Polymerization of Vinyl Chloride," Polymer Reaction Engineering: Modelling, Optimisation and Control, 16èmes Entretiens Jacques Cartier, Lyon, France, 1-3 Decembre, 2003.

58. Boutti, S., T.F. McKenna, "Unseeded Production of High Solid Content Low Viscosity Latexes," Polymerisation in Dispersed Media, Lyon, France, 4-8 April, 2004.
59. Pishvaie, M., C. Graillat, T.F. McKenna, P. Cassagnau, "Rheological Behaviour of Polystyrene Latex Near the Maximum Packing Fraction of Particles," Polymerisation in Dispersed Media, Lyon, France, 4-8 April, 2004.
60. Eriksson, E., Y. Banat, G. Weickert, T.F. McKenna, "CFD simulation of gas phase polyolefin microreactors," 8<sup>th</sup> International Workshop on Polymer Reaction Engineering, 4-6 October, 2004, Hamburg, Germany
61. Di Martino A., T.F. McKenna, G. Weickert, F. Sidoroff, "Toward a realistic model of particle fragmentation," 8<sup>th</sup> International Workshop on Polymer Reaction Engineering, 4-6 October, 2004, Hamburg, Germany
62. Farshchi, F., A.F. Santos, S. Othman, H. Hammouri, T. F. McKenna, "Monitoring of Emulsion Polymerization Using Conductimetry," 8<sup>th</sup> International Workshop on Polymer Reaction Engineering, 4-6 October, 2004, Hamburg, Germany
63. Bouzid, D., T.F. McKenna, "Effect of polypropylene particle size on the morphology of high impact polypropylene particles," 8<sup>th</sup> International Workshop on Polymer Reaction Engineering, 4-6 October, 2004, Hamburg, Germany
64. Pishvaie, M., C. Graillat, T.F. McKenna, P. Cassagnau, "Rheological behaviour of highly concentrated polystyrene latex near the maximum packing fraction of particles," 8<sup>th</sup> International Workshop on Polymer Reaction Engineering, 4-6 October, 2004, Hamburg, Germany.
65. S. Boutti, C. Graillat, T.F. McKenna, "High Solid Content Latexes: Unseeded Emulsions with 76% Solids and Very Low Viscosity," 2<sup>nd</sup> International Symposium on Polymeric Microspheres, 29-31 March, 2005, Washington Hotel, Fukui, Japan
66. S.Y.A. Shin, L.C. Simon, J.B.P. Soares, G. Scholz, T.F. McKenna, "Gas phase polymerization of ethylene using coordination catalysts supported on Montmorillonite: nanocomposites prepared by in situ polymerization," ECOREP III, Lyon, France, June 20-24, 2005)
67. F. M. Silva , J. P. Broyer, T. F. McKenna, E. L. Lima, J.C. Pinto, "Short Stop Reactor: A New Tool for Investigation of Olefin Gas-Phase Polymerization," ECOREP III, Lyon, France, June 20-24, 2005.
68. A. Di Martino, T.F. McKenna, J.P. Broyer, G. Weickert, "A Quenched-flow reactor for the observation of polyolefin morphology under industrial conditions at short times (<1s)," ECOREP III, Lyon, France, June 20-24, 2005.
69. A. Di Martino, T.F. McKenna G. Weickert, F. Sidoroff , "Toward a realistic model of particle fragmentation," ECOREP III, Lyon, France, June 20-24, 2005.
70. F.M. Silva, E.L. Lima, J.C. Pinto, T.F. McKenna, "Gas-Phase Copolymerization of Propylene / 1-Butene with Ziegler-Natta Catalyst," ECOREP III, Lyon, France, June 20-24, 2005.
71. V.F. Tisse, R.M. Briquel, T.F. McKenna, Investigation of reaction rate properties of polyethylene produced by homopolymerisation and copolymerisation of ethylene and 1-hexene in slurry phase with EtInd<sub>2</sub>ZrCl<sub>2</sub> on supports with different physical properties, ECOREP III, Lyon, France, June 20-24, 2005
72. D. Bouzid, T.F.L. McKenna, "Study and Control of the Distribution of Elastomer in High Impact PP," Polymer Reaction Engineering VI, 21-26 May 2006, Halifax, Canada.
73. A. DiMartino, F. Silva, J.C. Pinto, T.F.L. McKenna, "Stopped Flow Reactors For The Study Of The Nascent Polymerisation Of Ethylene," Polymer Reaction Engineering VI, 21-26 May 2006, Halifax, Canada.
74. M. Pishvaie, Ph. Cassagnau, T.F.L. McKenna, "Modelling Of The Rheological Properties Of Bimodal Emulsions," Polymer Reaction Engineering VI, 21-26 May 2006, Halifax, Canada.
75. H. Vale, T.F.L. McKenna, "Synthesis Of Bimodal Pvc Latexes By Emulsion Polymerization: An Experimental And Modeling Study," Polymer Reaction Engineering VI, 21-26 May 2006, Halifax, Canada.
76. F.M. Silva, T.F.L. McKenna, E. Lima, J.C. Pinto, "Synthesis of Polypropylene-Based Polymers in Liquid Pool and Gas-Phase Processes," Polymer Reaction Engineering VI, 21-26 May 2006, Halifax, Canada.
77. F.M. Silva, T.F.L. McKenna, E. Lima, J.C. Pinto, "In-Situ Preparation of Polypropylene / 1-Butene Alloys with a High-Activity Ziegler-Natta Catalyst, World Polymer Congress, 41<sup>st</sup> International Symposium on Macromolecules (IUPAC MACRO 2006), 16-21 July 2006, Rio de Janeiro, Brazil.

### PH.D. THESES UNDERWAY

1. Hugo VALE, "Modelling of the evolution of the PSD during emulsion polymerisation," January 2003 - present.
2. Ali FARZI "Nanocomposite films from miniemulsions," August 2004 – present (Co- direction with Mme Elodie BOURGEAT-LAMI).
3. Ula EL-JABY "Advanced applications of miniemulsions," August 2005-Present (Co-direction with Michael Cunningham, Queen's University, Kingston, Canada).
4. Jordan Pohn "Modelling and experimental study of latex Stability," August 2005-Present (Co-direction with Michael Cunningham, Queen's University, Kingston, Canada)
5. Ravindra UDAGAMA "Acrylic-Alkyd Hybrids via Miniemulsion Polymerisation," December 2005 – present (Co- direction with Mme Elodie BOURGEAT-LAMI).
6. Véronique MELLON "Clay-acrylic composite films via Miniemulsion Polymerisation," October 2005 – present (Co- direction with Mme Elodie BOURGEAT-LAMI).

### PH.D. COMPLETED

1. Virginie MATTIOLI, "Aspects génie chimiques de la polymérisation polyphasiques" March 1997- March 2000
2. Christine MARTIN, "Transport phenomena during polymerisation on heterogeneous catalysts." May 1997 - July 2000
3. Nida OTHMAN, "Advanced Strategies for Composition Control in Semi-continuous Emulsion Polymerization," October 1997 - July 2000.
4. Martine SCHNEIDER, "Etude de Procédés de Synthèse de Latex Multipopulés à Haut Extrait Sec," October 1997- September 2000
5. Montserrat FORTUNY, "Modélisation de la polymérisation en émulsion de latex multipopulés," June 1999 - November 2002.
6. Keltoum OUZINEB, "Emulsion and Miniemulsion Polymerization : Stabilization, tubular reactors and practical applications," September 1999- February 2003
7. Alexandre SANTOS, "Emulsion polymerisation: sensors and control," (Co-direction with Professor José Carlos PINTO, Universidad federal de Rio di Janeiro), June 1999-February 2003.
8. Salima BOUTTI, "Synthesis of High Solid Content Latexes," October 2000 - December 2003
9. Thomas LYS, "Mechanism of particle formation and growth in bimodal PVC latexes," October 2000- February 2004.
10. Djallal BOUZID, "Morphologie des particules de copolymères d'éthylène et de propylène," October 2001-October 2004
11. Farschad FARSCHID, "Commande de réacteurs de polymérisation en émulsion," January 2000 – December 2004, (Co- direction with Professor Hassan HAMMOURI, UCBL-Lyon I).
12. Erik ERIKSSON, "Validation of transport models for the gas and slurry phase polymerisation of olefins," November 2001- April 2005.
13. Audrey COSYNS, "Dispersion de polymères à granulométrie multimodale : application aux revêtements aqueux," October 2002 – October 2005
14. Malihae PISHVAIE; "Latex Rheology", (Co-direction with Philippe CASSAGNAU LMPBM), April 2002 – December 2005.
15. Audrey DIMARTINO, "Modelling of particle fragmentation, growth and morphology for polyolefins," November 2001- March 2006
16. Virginie TISSE, "Ethylene polymerisation on silica-supported catalysts," October 2002 – April 2006.
17. Fabricio SILVA "Polymerisation of propylene and butene on supported catalysts," (Co-direction with José Carlos PINTO, COPPE/UFRJ Rio de Janeiro, Brazil).

### POSTDOCTORAL FELLOWSHIPS

1. Dr Selwa BEN AMOR "Suivie Calorimétrique et Commande des Réacteurs de Polymérisation, October 1999 - October 2000.
2. Dr. Djallal BOUZID, "Use of Atomic Force Microscopy for the Study of High Impact Polypropylene" December 2004-April 2005.
3. Dr. Norma Negrete "Clay-acrylic composite films via Miniemulsion Polymerisation," October 2005 – present (Co- direction with Mme Elodie BOURGEAT-LAMI).

**M.SC./D.E.A**

1. MSc *Chemical engineering* Thomas GEREZ, "Role of the support morphology of silica based metallocenes," June 2006.
2. MSc *Chemistry* Ravindra UDAGAMA "Emulsion Polymerisation of Butyl Acrylate – process intensification," December 2005
3. MSc *Chemical engineering* Rémi BRIQUEL "Le rôle du support dans la polymérisation d'éthylène avec des catalyseurs métallocènes" June 2005
4. MSc *Chemical engineering* Sebastien FERRERO "L'application de la calorimétrie à la suivi de réacteurs de polymérisation" June 2004
5. MSc *Composites and Polymeric Materials* Florian PRADES "Etude d'une cascade de réacteurs agités pour la polymérisation en émulsion". June 2000
6. MSc *Composites and Polymeric Materials* Djallel BOUZID "Morphologie des particules de polyoléfines" June 2000
7. MSc *Chemical engineering* Kamel MAHFOUDI "Phénomènes de transport de matière pendant la polymérisation des oléfines" June 2000
8. M.Sc. *Chemical engineering* Sandrine MOREAU "Production of multipopulated latices in stirred tank reactors" June 1999
9. M.Sc *Composites and Polymeric Materials* Béatrice RENARD "Methods for polymerisation of acrylic acid in inverse suspension" June 1998.
10. M.Sc. *Chemical engineering* Jérôme TORRES "Emulsion copolymerisation in continuous stirred tank reactors" June 1997
11. M.Sc. *Chemical engineering* Alvaro VILLANEUAVE "Cinétique de la polymérisation radicalaire en solution" June 1997
12. M.Sc. *Chemical engineering* Nora GHERIB,: "Elaboration of a reaction calorimeter for free radical polymerisation." June 1996
13. M.Sc. *Composites and Polymeric Materials* Boris BILLY "A metallic membrane process for the suspension polymerisation of styrene." June 1996
14. M.Sc. *Composites and Polymeric Materials* Barbara GANTILLON "Process for the production of PET in divided media." June 1996