

# List of Institute for Polymer Research Preprints 1979-2010

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- 10/001 **Optimal Bayesian design of experiments applied to nitroxide-Mediated radical polymerization**  
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- 10/002 **Kinetic aspects of styrene polymerization with an acyloxyamine**  
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- 10/003 **Returning to basics: Direct integration of the full molecular-weight distribution equations in addition polymerization**  
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- 10/004 **Mathematical modeling of acrylonitrile-butadiene emulsion copolymerization: Model development and validation**  
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Soft Matter, Acc., 03/10
- 10/007 **Arborescent polymers with a mesoscopic scale**  
T. Aridi and M. Gauthier  
Book Chapter in Complex Macromolecular Architectures: Synthesis, Characterization and Self-Assembly, edited by N., Hadjichristidis, Y. Tezuka and A Hirao, Wiley, 2010
- 10/008 **Synthesis of I,4-Polybutadiene dendrimer-arborescent polymer hybrids**  
M. Gauthier and A. Munam  
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Adv. in Polym. Tech., Acc., 01/10

- 10/010      **Scaling-up a reactive extrusion operation: a one-dimensional simulation analysis**  
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- 10/011      **Fluorine-containing arborescent polystyrene-graft-polyisoprene copolymers as polymer processing additives**  
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- 10/012      **Nanodomain formation in lipid membranes probed by time-resolved fluorescence**  
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- 10/013      **Fluorescence studies of a series of monodisperse telechelic  $\alpha$ ,  $\omega$ -diprenyl-poly(*N*-isopropylacrylamide)s in ethanol and in water**  
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- 10/014      **A study of the dynamics of the branch ends of a series of pyrene-labeled dendrimers based on pyrene excimer formation**  
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- 09/004 **Effect of viscosity on long range polymer chain dynamics in solution studied with a fluorescence blob model**  
M. Ingratta and J. Duhamel  
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- 09/005 **Kinetics and molecular weight development of dithiolactone-mediated radical polymerization of styrene**  
J. Guillermo Soriano-Moro, G. Jaramillo-Soto, Ramiro Guerrero-Santos and E. Vivaldo-Lima  
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- 09/006 **Peroxide-controlled degradation of polypropylene using a tetra-functional initiator**  
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- 09/009      **Modelling of the nitroxide-mediated radical copolymerization of styrene and divinylbenzene**  
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- 09/010      **Effect of stabilizer concentration and controller structure and composition on polymerization rate and molecular weight development in RAFT polymerization of styrene in supercritical carbon dioxide**  
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- 09/011      **Chain entanglements and mechanical behavior of high density polyethylene**  
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- 09/012      **A critical overview of sensors for monitoring polymerizations**  
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- 09/013      **Polymer network mobility and environmental stress cracking resistance of high density polyethylene**  
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- 09/014      **Kinetics of nitroxide mediated radical polymerization of styrene with unimolecular initiators**  
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- 09/017      **Cross-linked latex particles grafted with polyisoprene as model rubber-compatible fillers**  
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T.R. Nogueira, L.M.F. Lona, N.T. McManus, E. Vivaldo-Lima and A. Penlidis  
J. Mat. Sci., Acc., 12/09

09/019

**Grade transition dynamic optimization of the living nitroxide-mediated radical polymerization of styrene in a tubular reactor**

A.G. Zitlalpopoca-Soriano, E. Vivaldo-Lima, A. Fores-Tlacuahuac  
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**2008**

- 08/001     **Arborescent polystyrene-graft-poly(2-vinylpyridine) copolymers as unimolecular micelles: solubilization studies**  
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- 08/003     **Self-assembly of arborescent polystyrene-graft-poly(ethylene oxide) copolymers at the air-water interface**  
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- 08/004     **Improvements in the hydrogenation of nitrile rubber using Wilkinson's catalyst**  
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Rubber Chem and Tech., Acc., 03/08
- 08/005     **Hydrosilylation of impact polypropylene co-polymer in a twin-screw extruder**  
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- 08/006     **Effect of the addition of inert or TEMPO-capped prepolymer on polymerization rate and molecular weight development in the nitroxide-mediated radical polymerization of styrene**  
M. Roa-Luna, A. Nabifar, N.T. McManus, E. Vivaldo-Lima, L.M.F. Lona, A. Penlidis  
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- 08/007     **Simulation of reversible addition-fragmentation transfer (RAFT) Dispersion polymerization in supercritical carbon dioxide**  
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- 08/008     **A comparison of modeling approaches for dispersion homopolymerization of methyl methacrylate (MMA) and styrene in supercritical carbon dioxide**  
I.A. Quintero-Ortega, G. Jaramillo-Soto, P.R. Garcia-Moran, M. Luz Catellanos-Cardenas, G.Luna-Barcenas, E. Vivaldo-Lima  
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- 08/009      **A tensile strain hardening test indicator of environmental stress cracking resistance**  
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- 08/010      **Effect of side-chain length on the side-chain dynamics of a  $\alpha$ -helical poly(L-glutamic acid) as probed by a fluorescence Blob model**  
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- 08/011      **A case for using randomly labeled polymers to study long range polymer chain dynamics by fluorescence**  
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- 08/012      **Large-scale synthesis of arborescent polystyrenes**  
A. Munam and M. Gauthier  
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- 08/013      **A replicated investigation of nitroxide-mediated radical polymerization of styrene over a range of reaction conditions**  
A. Nabifar, N.T. McManus, E. Vivaldo-Lima, L.M.F. Lona, A. Penlidis  
Can. J. Chem. Eng., Acc., 06/08
- 08/014      **Asymmetric caging in soft colloidal mixtures**  
C. Mayer, E. Zaccarelli, E. Stiakakis, C.N. Likos, F. Sciortino, A. Munam, M. Gauthier, N. Hadjichristidis, H. Iatrou, P. Tartaglia, H. Lowen, D. Vlassopoulos  
Nature Materials, Acc., 07/08
- 08/015      **Arborescent amphiphilic copolymers as templates for the preparation of gold nanoparticles**  
J. Dockendorff, M. Gauthier, A. Mourran and M. Moller  
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- 08/016      **Temperature-responsive supramolecular assembly and morphology of arborescent copolymer micelles with a solvophilic core—solvophobic shell structure**  
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- 08/017      **Pressure- and temperature-induced association of arborescent polystyrene- *graft*-poly(ethylene oxide) copolymers at the air-water interface**  
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- 08/018      **Modeling of ethylene polymerization with difunctional initiators in tubular reactors**  
P.K.F. Khazraei, R. Dhib  
J. App. Polym. Sci, 109, 3908-3922, 2008
- 08/019      **Sustained release properties of arborescent polystyrene-graft-poly (2-vinylpyridine) copolymers**  
G.N. Njikang, M. Gauthier, J. Li  
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- 08/020      **Thermal polymerization of styrene in the presence of TEMPO**  
A. Nabifar, N.T. McManus, E. Vivaldo-Lima, L.M.F. Lona and A. Penlidis  
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- 08/021      **An experimental study on the free-radical copolymerization kinetics with crosslinking of styrene and divinylbenzene in supercritical carbon dioxide**  
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- 08/022      **Modified frontal polymerization of poly(methyl methacrylate)**  
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- 08/023      **Modeling of polymerization kinetics and molecular weight development in the microwave-activated nitroxide-mediated radical polymerization of styrene**  
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## 2007

- 07/001     **Nitroxide-mediated controlled degradation of polypropylene**  
A. Psarreas, N. McManus, C. Tzoganakis, A. Penlidis  
Antec 2007, Acc., 01/07
- 07/002     **Effect of a polydimethylsiloxane-modified polyolefin additive on the extrusion of LLDPE**  
S.-H. Zhu, N.T. McManus, C. Tzoganakis, A. Penlidis  
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- 07/004     **Recent advances in the study of multifunctional initiators in free radical polymerizations**  
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- 07/006     **Comparative study of propylene polymerization using  $\text{Me}_2\text{Si}(\text{RInd})_2\text{ZrCl}_2/\text{SiO}_2\text{-SMAO}/\text{AlR}_3$  and  $\text{Me}_2\text{Si}(\text{RInd})_2\text{ZrCl}_2/\text{MAO}$  (R=Me, H)**  
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- 07/007     **Atom-transfer radical polymerization of styrene with bifunctional and monofunctional initiators: experimental and mathematical modelling results**  
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- 07/008     **Prediction of chain length distribution of polystyrene made in batch reactors with bifunctional free-radical initiators using dynamic Monte Carlo simulation**  
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- 07/017      **A mathematical model for the kinetics of crystallization in crystal**  
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- 07/019      **Correlating pyrene excimer formation with polymer chain dynamics in solution. Possibilities and limitations.**  
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- 07/020      **Dynamic Monte Carlo simulation of olefin polymerization in stopped-flow reactors**  
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- 07/021      **Nitroxide-mediated controlled degradation of polypropylene**  
A. Psarreas, C. Tzoganakis, N. McManus and A. Penlidis  
Polym. Eng. Sci., Acc., 08/07
- 07/022      **A practical approach to modeling time-dependent nonlinear creep behavior of polyethylene for structural applications**  
H. Liu, M.A. Polak and A. Penlidis  
Polym. Eng. Sci., Acc. 09/07
- 07/023      **Copolymer composition control policies: characteristics and applications**  
T. Fujisawa and A. Penlidis  
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- 07/024      **Toward a living radical polymerization of styrene by using dithiolactones as a new type of mediating agent**  
J.G.Soriano-Moro, J.C.Rico-Valverde, F.J. Enriquez-Medrano, H.Maldonado-Textle, E. Vivaldo-Lima, R. Acosta-Ortiz and R. Guerrero- Santos  
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- 07/025      **Steady state simulation of ethylene polymerization using multiple-site coordination catalysts**  
F.Perez Valencia and J.B.P. Soares  
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- 07/026      **Nanofilled silicone dielectrics prepared with surfactant for outdoor insulation applications**  
I. Ramirez, E.A. Cherney, S. Jayaram and M. Gauthier  
IEEE Trans. Dielectr. Electr. Insul., Acc., 10/07
- 07/027      **Simulation of polymerization and long chain branch formation in a semi-batch reactor using two single-site catalysts**  
S. Mehdiabadi, J.B.P.Soares, A. H. Dekmezian  
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- 07/028      **Conformation of arborescent polymers in solution by small-angle neutron scattering: segment density and core-shell morphology**  
S.I. Yun, K.-C. Lai, R.M. Briber, S.J. Teertstra, M. Gauthier, B.J. Bauer  
Macromolecules, Acc., 12/07
- 07/029      **Arborescent polystyrene-graft-poly(tert-butyl methacrylate) copolymers**  
R.A. Kee and M. Gauthier  
J. Polym. Sci., Part A: Polym. Chem., Acc., 12/07
- 07/030      **Chain length distributions of polyolefins made in stopped-flow reactors for non-instantaneous site activation**  
J.B.P. Soares and A.E. Hamielec  
Macromolecular Reaction Engineering, Acc., 12/07
- 07/031      **Structure and optical properties of natural biopolymers chitin and chitosan**  
G. Luna-Barcenas, B. Gonzalez-Campos, E.A. Elizalde-Pena,  
E. Vivaldo-Lima, J.F. Louvier-Hernandez, Y.V. Vorobiev and  
J. Gonzalez-Hernandez  
Physica Status Solidi (a)-Applications and Materials Science, Acc., 12/07

## 2006

- 06/001 **Mathematical modelling of atom-transfer radical polymerization using bifunctional initiators**  
M. Al-Harhi, J.B.P. Soares, L.C. Simon  
Macromol. Theory and Sim., Acc., 01/06
- 06/002 **Modelling of atom transfer radical polymerization with bifunctional initiators: diffusion effects and case studies**  
M. Al-Harhi, J.B.P. Soares, L.C. Simon  
Macromol. Chem. And Phys., Acc., 01/06
- 06/003 **One-pot synthesis of arborescent polystyrenes**  
Z. Yuan and M. Gauthier  
Macromolecules, Acc., 02/06
- 06/004 **Dilute-solution structure of charged arborescent graft polymer**  
S.I. Yun, R.M. Briber, R.A. Kee, M. Gauthier  
Polymer, Acc., 02/06
- 06/005 **Bulk copolymerization of styrene and methyl methacrylate at elevated temperatures**  
S. Shankar. R. Khesareh, N. McManus and A. Penlidis  
J. Macromol. Sci., Pure and Appl. Chem., Acc., 01/06
- 06/006 **Controlled free-radical copolymerization kinetics of styrene and divinylbenzene by bimolecular NMRP using TEMPO and dibenzoyl peroxide**  
E. Tuinman, N.T. McManus, M. Roa-Luna, E. Vivlado-Lima, L.M.F. Lona, A. Penlidis  
J. Macromol. Sci., Pure and Appl. Chem., Acc., 02/06
- 06/007 **Experimental study of a tetrafunctional peroxide initiator: bulk free radical polymerization of butyl acrylate and vinyl acetate**  
M.J. Scolah, R. Cosentino, R. Dhib, A. Penlidis  
Polymer Bulletin, Acc., 03/06
- 06/008 **Modelling of free radical polymerization of styrene and methyl methacrylate by a tetrafunctional initiator**  
M.J. Scolah, R. Dhib, A. Penlidis  
Chem. Eng. Sci., Acc., 03/06
- 06/009 **Layer-by-layer self-assembled polyelectrolyte membranes for solvent dehydration by pervaporation**  
Z. Zhu, X. Feng and A. Penlidis  
Mat. Sci. Eng., Acc., 12/05

- 06/010      **Of the uses of the pyrene label for fluorescence studies of polymeric interfaces**  
J. Duhamel  
Ed. by P. Chen, Woodhead Publishing Co., 2005, pg. 214-248
- 06/011      **Study of the semidilute solutions of poly (*N,N*-dimethylacrylamide) by fluorescence and its implications to the kinetics of coil-to-globule transitions**  
K. Irondi, M. Zhang, J. Duhamel  
J. Phys. Chem. B 110 pg. 2628-2637, 2006
- 06/012      **NMR analysis of butyl acrylate-methyl methacrylate-alpha methyl styrene terpolymers**  
N.T. McManus and A. Penlidis  
J. Appl. Polym. Sci., Acc., 03/06
- 06/013      **Studies of copolymers of 3-methacryloyloxystyryl-4'-methylphenyl ketone and methyl methacrylate**  
R. Santhi, K. V. Babu, A. Pelidis, S. Nanjundan  
React. & Funct. Polym., Acc., 04/06
- 06/014      **A comparison of reaction mechanisms for reversible addition-fragmentation chain transfer polymerization using modeling tools**  
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- 06/015      **Dynamic Monte Carlo Simulation of Atom-Transfer Radical Polymerization**  
M. Al-Harhi, J.B.P. Soares, L.C. Simon  
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- 06/016      **Determination of the relative importance of process factors in particle size distribution in suspension polymerization using a Bayesian experimental design technique**  
E. Vivaldo-Lima, A. Penlidis, P.E. Wood, A. E. Hamielec  
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- 06/017      **Mathematical modeling of crystallization analysis fractionation (Crystaf) of polyethylene**  
S. Anantawaraskul, J.B.P. Soares, P. Jirachaithorn, J. Limtrakul  
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- 06/018      **Chain length distributions of polyolefins made with coordination catalysts at very short polymerization times—analytical solution and Monte Carlo simulation**  
J.B.P. Soares and A. E. Hamielec  
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- 06/019 **Modeling of the homogeneous free-radical copolymerization kinetics of fluoromonomers in carbon dioxide at supercritical conditions**  
I.A. Quintero-Ortega, E. Vivaldo-Lima, R.B. Gupta, G. Luna-Bárceñas and A. Penlidis  
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- 06/020 **Polymer chain dynamics in solution probed with a fluorescence blob model**  
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- 06/021 **Micromechanical Approach to Modeling Damage in Crystalline Polyethylene**  
J. Alvarado-Contreras, M.A. Polak, A. Penlidis  
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- 06/022 **Characterization by dilute solution and rheological methods of polystyrene and poly(methyl methacrylate) produced with a tetrafunctional peroxide initiator**  
M.J. Scolah, C. Tzoganakis, R. Dhib, A. Penlidis  
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- 06/023 **The bifurcation behavior of a polyurethane continuous stirred tank reactor**  
V. Zavala-Tejeda, A. Flores-Tlacuahuac, E. Vivaldo-Lima  
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- 06/024 **Another perspective on the nitroxide mediated radical polymerization (NMRP) of styrene using 2,2,6,6-tetramethyl-1-piperidinyloxy (TEMPO) and dibenzoyl peroxide (BPO)**  
M. Roa-Luna, A. Nabifar, M.P. Diaz-Barber, N.T. McManus, E. Vivaldo-Lima, L.M.F. Lona and A. Penlidis  
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- 06/025 **Terpolymerization with depropagation: modeling the copolymer composition of the methyl methacrylate/alpha-methylstyrene/butyl acrylate system**  
M.J. Leamen, N.T. McManus, A. Penlidis  
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- 06/026 **Assessing the importance of diffusion-controlled effects on polymerization rate and molecular weight development in nitroxide-mediated radical polymerization of styrene**  
M. Roa-Luna, M.P. Diaz-Barber, E. Vivaldo-Lima, L.M.F. Lona, N.T. McManus and A. Penlidis  
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- 06/027 **Dynamic Monte Carlo simulation of ATRP with bifunctional initiators**  
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- 06/028      **Coordination Polymerization**  
J.B.P. Soares, T. McKenna, C.P. Cheng  
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- 06/029      **A kinetic study of metallocene-catalyzed ethylene polymerization using different aluminoxane cocatalysts**  
D.M. Sarzotti, D.J. Marshman, W.E. Ripmeester, J.B.P. Soares  
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J.B. Ximenes, P.V.R. Mesa, L.M.F. Lona, E. Vivaldo-Lima, N.T. McManus, A. Penlidis  
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- 05/001 **Characterization of the aggregates made by short poly(ethylene oxide) chains labelled at one end with pyrene**  
H. Siu, T.J.V. Prazeres, J. Duhamel  
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- 05/002 **Crystallization Analysis Fractionation (Crystaf)**  
J.B.P. Soares, S. Anantawaraskul  
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- 05/003 **Microstructural characterization of molecular weight fractions of ethylene/1,7-octadiene copolymers made with a constrained geometry catalyst**  
D.M. Sarzotti, A. Narayan, P.M. Whitney, L.C. Simon, J.B.P. Soares  
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- 05/004 **Diagnosis of impurity levels in a copolymerization process**  
S. Lou, T.A. Duever, H.M. Budman  
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- 05/005 **Effect of solvent quality toward the association of succinimide pendants of a modified ethylene-propylene copolymer in mixtures of toluene and hexane**  
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- 05/006 **Synthesis of arborescent isoprene homopolymers**  
Z. Yuan and M. Gauthier  
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- 05/007 **A practical approach to simulate polymerizations with minimal information**  
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- 05/010     **High temperature bulk copolymerization of methyl methacrylate and acrylonitrile: I. Reactivity ratio estimation**  
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R. Khesareh, N.T. McManus and A. Penlidis  
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- 05/018     **Grafting of ethylene-ethyl acrylate-maleic anhydride terpolymer with amino-terminated polydimethylsiloxane during reactive processing**  
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**Associations between a pyrene-labeled hydrophobically modified  
alkali swellable emulsion copolymer and sodium dodecyl sulfate  
probed by fluorescence, surface tension and rheology**

H. Siu and J. Duhamel

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- 04/002 **Dendrigraft polymers: macromolecular engineering on a mesoscopic scale**  
S.J. Teertstra and M. Gauthier  
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- 04/003 **Blob model analysis of the pH-induced fluorescence quenching of two anthracene-labeled poly(2-vinylpyridine)s**  
J. Duhamel  
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- 04/004 **Homopolymer of 4-propanoylphenyl methacrylate and its copolymers with glycidyl methacrylate: Synthesis, characterization, reactivity ratios and application as adhesives**  
G.G. Godwin, C.S. Jone Selvamalar, A. Penlidis and S. Nanjundan  
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- 04/005 **Homopolymer and Copolymers of 4-Benzyloxycarbonylphenyl Acrylate with Glycidyl Methacrylate: Synthesis, Characterization, Reactivity Ratios and Application as Adhesive for Leather**  
C.S. Jone Selvamalar, P.S. Vijayanand, A. Penlidis, S. Nanjundan  
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S. Anantawaraskul, J.B.P. Soares, P.M. Wood-Adams  
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F.A.N. Fernandes, L.M.F. Lona, A. Penlidis  
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- 04/009 **Copolymers of 4-(3,4-dimethoxy cinnamoyl)phenyl acrylate and MMA: Synthesis, characterization, photocrosslinking properties and monomer reactivity ratios**  
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- 01/014 **Mechanical properties of ethylene/1-hexene copolymers with tailored short chain branching distributions**  
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