1. Jensen, B. W. The origin of the Polymer Concept. *J. Chem. Educ.* **2008,** *85*, 624-625.
2. Charles E. C. Jr. Polymer Chemistry, 6th edition, Marcel Dekkar, Inc **2003.**
3. Rudin, A. The Elements of Polymer Science & Engineering, 2nd edition, Academic Press, **1998.**
4. Meneghetti, P.; Qutubuddin, S. Synthesis of Poly(methyl methacrylate) nanocomposites via Emulsion Polymerization Using a Zwitterionic Surfactant. *Langmuir* **2004,** *20*, 3424-3430.
5. i) Mia, F. L.; Linb, Y. M.; Wub, Y. B.; Shyub, S. S.; Tsai, Y. H. Chitin/PLGA blend microspheres as a biodegradable drug-delivery system: phase-separation, degradation and release behavior. *Biomaterials* **2002,** *23*, 3257–3267. ii) Prashantha, K.V. H.; Lakshman, K.; Shamalab, T.R.; Tharanathan, R.N. Biodegradation of chitosan-graft-polymethylmethacrylate films. *Int. Biodeterior. Biodegradation.* **2005,** *56*, 115–120.
6. Wang, J. L.; Grimaud, T.; Matyjaszewski, K. Kinetic Study of the Homogeneous Atom Transfer Radical Polymerization of Methyl Methacrylate. *Macromolecules* **1997,** *30*, 6507-6512.
7. Matyjaszewski, K.; Wang, J. L.; Grimaud, T.; Shipp, D. A. Controlled/"Living" Atom Transfer Radical Polymerization of Methyl Methacrylate Using Various Initiation Systems. *Macromolecules* **1998,** *31*, 1527-1534.
8. Soares, J. B. P.; Perez, O. Handbook of Polymer Synthesis, Characterization, and Processing, 1st Edition. Edited by Enrique Saldıvar-Guerra and Eduardo Vivaldo-Lima. 2013 John Wiley & Sons, Inc. Publication, **2013.**
9. Grimaud, T.; Matyjaszewski, K. Controlled/"Living" Radical Polymerization of Methyl Methacrylate by Atom Transfer Radical Polymerization. *Macromolecules* **1997,** *30*, 2216-2218.
10. Kato, M.; Kamigaito, M.; Sawamoto, M.; Higashimura, T. Polymerization of Methyl Methacrylate with the Carbon Tetrachloridel Dichlorotris-(triphenylphosphine) ruthedum(II)/Methylaluminum Bis(2,6-di-tert-butylphenoxide) Initiating System: Possibility of Living Radical Polymerization. *Macromolecules* **1996,** *28*, 1721-1723.
11. Haddleton, D. M.; Kukulj, D.; Duncalf, D. J.;. Heming, A. M.; Shooter, A. J. Low-Temperature Living "Radical" Polymerization (Atom Transfer Polymerization) of Methyl Methacrylate Mediated by Copper(I) N-Alkyl-2-Pyridylmethanimine Complexes. *Macromolecules* **1998,** *31*, 5201-5205.

12. Xia, J.; Matyjaszewski, K. Controlled/"Living" Radical Polymerization. Homogeneous Reverse Atom Transfer Radical Polymerization Using AIBN as the Initiator. *Macromolecules* **1997,** *30*, 7692-7696.
13. Bartholome, C.; Beyou, E.; Bourgeat-Lami, E.; Chaumont, P.; Lefebvre, F.; Zydowicz, N. Nitroxide-Mediated Polymerization of Styrene Initiated from the Surface of Silica Nanoparticles. In Situ Generation and Grafting of Alkoxyamine Initiators. *Macromolecules* **2005,** *38*, 1099-1106.
14. Asami, R.; Takaki M. Synthesis of macromers by means of living polymers and their polymerizabilities. *Makromol. Chem. Suppl.* **1985,** *12*, 163-173.
15. Rempp, P.; Franta, E.; Herz, J.E. Macromolecular engineering by anionic methods. *Adv. Polym. Sci.* **1988,** *86*, 145-173.
16. Pitsikalis, M.; Pispas, S.; Mays, J. W.; Hadjichristidis, N. Nonlinear block copolymer architectures. *Adv. Polym. Sci.* **1998,** *135*, 1-2.
17. a) Szwarc, M.; Levy, M.; Milkovich, R. Polymerization initiated by electron transfer to monomer. A new method of formation of block copolymers. *J. Am. Chem. Soc.* **1956,** *78*, 2656-2657, b) Sawamoto, M.; Kamigaito, M.; Higashimura, T. Living cationic polymerization of isobutyl vinyl ether by the diphenyl phosphate/zinc iodide initiating system. *Polym. Bull.* **1988,** *20,* 407–412, c) Mishra, M. K.; Kennedy, J. P. Living Carbocationic Polymerization. VII. Living Polymerization of Isobutylene by Tertiary Alkyl (or Aryl) Methyl Ether/Boron Trichloride Complexes. *J. Macromol. Sci. A.* **1987,** *24*, 933-948.
18. Hsieh, H.; Quirk, R. Anionic Polymerization: Principles and practical applications Marcel Dekker, Inc: New York, 1996.
19. Jousset, S.; Qiu, J.; Matyjaszewski, K. Atom Transfer Radical Polymerization of Methyl Methacrylate in Water-Borne System. *Macromolecules* **2001,** *34,* 6641-6648.
20. Dhar, A.; Koiry, B. P.; Haloi, D. J. Synthesis of poly(methyl methacrylate) via ARGET ATRP and study of the effect of solvents and temperatures on its polymerization kinetics. *Int. J. Chem. Kinet.* **2018,** *50,* 1–7
21. Wang, Y.; Zhang, Y.; Parker, B.; Matyjaszewski, K. ATRP of MMA with ppm Levels of Iron Catalyst. *Macromolecules* **2011,** *44,* 4022–4025
22. Zhang, Y.; Zhang, W.; Chen, X.; Cheng, Z.; Wu, J.; Zhu, J.; Zhu, X. Synthesis of Novel Three-Arm Star Azo Side-Chain Liquid Crystalline Polymer Via ATRP and

Photoinduced Surface Relief Gratings. *J. Polym. Sci. A Polym. Chem.* **2008**, *46*, 777–789.

23. Li, M. H.; Keller, P.; Albouy, P. A. Novel Liquid Crystalline Block Copolymers by ATRP and ROMP. *Macromolecules* **2003,** *36*, 2284-2292
24. Ramakrishnan A.; Dhamodharan, R. Facile Synthesis of ABC and CBABC Multiblock Copolymers of Styrene, tert-Butyl Acrylate, and Methyl Methacrylate via Room Temperature ATRP of MMA. *Macromolecules* **2003,** *36*, 1039-1046.
25. Karanam, S.; Goossens, H.; Klumperman, B.; Lemstra, P. “Controlled” Synthesis and Characterization of Model Methyl Methacrylate/tert-Butyl Methacrylate Triblock Copolymers via ATRP. *Macromolecules* **2003,** *36*, 3051-3060.
26. Penfold, H. V.; Holder, S. J.; Kenzie, B. E. M. Octadecyl acrylate-Methyl methacrylate block and gradient copolymers from ATRP: Comb-like stabilizers for the preparation of micro- and nano-particles of poly(methyl methacrylate) and poly(acrylonitrile) by non-aqueous dispersion polymerization. *Polymer* **2010**, *51*, 1904-1913.
27. Hedrick, J. L.; Trollsas, M.; Hawker, C. J.; Atthoff, B.; Claesson, H.; Heise, A.; Miller, R. D.; Mecerreyes D.; Jerome, R.; Dubois, P. Dendrimer-like Star Block and Amphiphilic Copolymers by Combination of Ring Opening and Atom Transfer Radical Polymerization. *Macromolecules* **1998,** *31*, 8691-8705.
28. Werne, T. V.; Patten, T. E.; Perruchot, C.; Khan, M. A.; Kamitsi, A.; Armes, S. P. Synthesis of Well-Defined, Polymer-Grafted Silica Particles by Aqueous ATRP. *Langmuir* **2001,** *17*, 4479-4481.
29. Hong, S. C.; Pakula, T.; Matyjaszewski, K. Preparation of Polyisobutene-graft-Poly(methyl methacrylate) and Polyisobutene-graft-Polystyrene with Different Compositions and Side Chain Architectures through Atom Transfer Radical Polymerization (ATRP). *Macromol. Chem. Phys.* **2001,** *202*, 3392–3402.
30. Wang, W. J.; Liu, P.; Li, B. G.; Zhu, S. One-Step Synthesis of Hyperbranched Polyethylene Macroinitiator and Its Block Copolymers with Methyl Methacrylate or Styrene via ATRP. *J. Polym. Sci. A Polym. Chem.* **2010,** *48*, 3024–3032.
31. Zhang, K.; Wang, J.; Subramanian, R.; Ye, Z.; Lu, J.; Yu, Q. Chain Walking Ethylene Copolymerization with an ATRP Inimer for One-Pot Synthesis of Hyperbranched Polyethylenes Tethered with ATRP Initiating Sites. *Macromol. Rapid Commun.* **2007,** *28*, 2185–2191.

32. Zhu, S.; Yan, D. Atom Transfer Radical Polymerization of Methyl Methacrylate Catalyzed by Iron^{II} Chloride/Isophthalic Acid System. *Macromolecules* **2000,** *33,* 8233-8238.
33. Hamasaki, S.; Kamigaito, M.; Sawamoto, M. Amine Additives for Fast Living Radical Polymerization of Methyl Methacrylate with $RuCl_2(PPh3)_3$. *Macromolecules* **2002,** *35,* 2934-2940.
34. Zhang, H.; Hong, K.; Mays, J. W. Synthesis of Block Copolymers of Styrene and Methyl Methacrylate by Conventional Free Radical Polymerization in Room Temperature Ionic Liquids. *Macromolecules* **2002,** *35,* 5738-5741.
35. Yang, J.; Ding, S.; Radosz, M.; Shen, Y. Reversible Catalyst Supporting via Hydrogen-Bonding-Mediated Self-Assembly for Atom Transfer Radical Polymerization of MMA. *Macromolecules* **2004,** *37,* 1728-1734.
36. Wang, B.; Zhuang, Y.; Luo, X.; Xu, S.; Zhou, X. Controlled/"Living" Radical Polymerization of MMA Catalyzed by Cobaltocene. *Macromolecules* **2003,** *36,* 9684-9686.
37. Kajiwara, A.; Matyjaszewski, K.; Kamachi, M. Simultaneous EPR and Kinetic Study of Styrene Atom Transfer Radical Polymerization (ATRP). *Macromolecules* **1998,** *31,* 5695-5701.
38. Wang, J. S.; Matyjaszewski, K. Living/Controlled Radical Polymerization. Transition-Metal-Catalyzed Atom Transfer Radical Polymerization in the Presence of a Conventioal Radical Initiator. *Macromolecules* **1995,** *28,* 7572-7573.
39. Matyjaszewski, K.; Wei, M.; Xia, J.; Gaynor, S. G. Atom transfer radical polymerization of styrene catalyzed by copper carboxylate complexes. *Macrornol. Chem. Phys.* **1998**, *199,* 2289-2292.
40. Rademacher, J. T.; Baum, M.; Pallack, M. E.; Brittain, W. J.; Simonsick, W. J.; Atom Transfer Radical Polymerization of N,N-Dimethylacrylamide. *Macromolecules* **2000,** *33,* 284-288.
41. Xia, J.; Zhang, X.; Matyjaszewski, K. Atom Transfer Radical Polymerization of 4-Vinylpyridine. *Macromolecules* **1999,** *32,* 3531-3533.
42. Pietrasik, J.; Tsarevsky, N. V. Synthesis of basic molecular brushes: ATRP of 4-vinylpyridine in organic media. *Eur. Polym. J.* **2010,** *46,* 2333–2340.

43. Al-Harthi, M.; Sardashti, A.; Soares, J. B.P.; Simon, L. C. Atom transfer radical polymerization (ATRP) of styrene and acrylonitrile with monofunctional and bifunctional initiators. *Polymer* **2007,** *48,* 1954-1961.
44. Matyjaszewski, K.; Wei, M.; Xia, J.; Dermott, N. E. M. Controlled/"Living" Radical Polymerization of Styrene and Methyl Methacrylate Catalyzed by Iron Complexes, *Macromolecules* **1997,** *30,* 8161-8164.
45. Kotani, Y.; Kamigaito, M.; Sawamoto, M. FeCp(CO)$_2$I: A Phosphine-Free Half-Metallocene-Type Iron(II) Catalyst for Living Radical Polymerization of Styrene. *Macromolecules* **1999,** *32,* 6877-6880.
46. Paterson, S.; Brown, M. D. H.; Chirila, T. V. Imelda Keen, Andrew K. Whittaker, Murray V. Baker, The Synthesis of Water-Soluble PHEMA via ARGET ATRP in Protic Media. *J. Polym. Sci. A Polym. Chem.* **2010,** *48,* 4084–4092.
47. Bai, L.; Zhang, L.; Zhang, Z.; Tu, Y.; Zhou, N.; Cheng, Z.; Zhu, X. Iron-Mediated AGET ATRP of Styrene in the Presence of Catalytic Amounts of Base. *Macromolecules* **2010,** *43,* 9283–9290.
48. He, W.; Zhang, L.; Bai, L.; Zhang, Z.; Zhu, J.; Cheng, Z.; Zhu, X. Iron-mediated AGET ATRP of Methyl Methacrylate in the Presence of Catalytic Amounts of Base. *Macromol. Chem. Phys.* **2011,** *212,* 1474–1480.
49. Zhang, L.; Cheng, Z.; Zhang, Z.; Xu, D.; Zhu, Z. Fe(III)-catalyzed AGET ATRP of styrene using triphenyl phosphine as ligand. *Polym. Bull.* **2010,** *64,* 233–244.
50. Kwak, Y.; Magenau, A. D. J.; Matyjaszewski, K. ARGET ATRP of Methyl Acrylate with Inexpensive Ligands and ppm Concentrations of Catalyst. *Macromolecules* **2011,** *44,* 811–819.
51. Uegaki, H.; Kotani, Y.; Kamigaito, M.; Sawamoto, M. Nickel-Mediated Living Radical Polymerization of Methyl Methacrylate. *Macromolecules* **1997,** *30,* 2249-2253.
52. Kotani, Y.; Kamigaito, M.; Sawamoto, M. Re(V)-Mediated Living Radical Polymerization of Styrene:1 $ReO_2I(PPh_3)_2$/R-I Initiating Systems. *Macromolecules* **1999,** *32,* 2420-2424.
53. Haddleton, D. M.; Clark, A. J.; Crossman, M. C.; Duncalf, D. J.; Heming, A. M.; Morsley, S. R.; Shooter, A. J. Atom transfer radical polymerisation (ATRP) of methyl methacrylate in the presence of radical inhibitors. *Chem. Commun.* **1997,** *13,* 1173-1174.

54. Haddleton, D. M.; Kukulj, D.; Radigue, A. P. Atom transfer polymerisation of methyl methacrylate mediated by solid supported copper catalysts. *Chem. Commun.* **1999,** *1,* 99–100.

55. Matyjaszewski, K.; Patten, T. E.; Xia, J. Controlled/“Living” Radical Polymerization. Kinetics of the Homogeneous Atom Transfer Radical Polymerization of Styrene. *J. Am. Chem. Soc.* **1997,** *119,* 674-680.

56. Sluis, M. V.; Barboiu, B.; Pesa, N.; Percec, V. Rate Enhancement by Carboxylate Salts in the CuCl, Cu2O, and Cu(0) Catalyzed “Living” Radical Polymerization of Butyl Methacrylate Initiated with Sulfonyl Chlorides. *Macromolecules* **1998,** *31,* 9409-9412.

57. Matyjaszewski, K.; Coca, S.; Gaynor, S. G.; Wei, M.; Woodworth, B. E. Zerovalent Metals in Controlled/“Living” Radical Polymerization. *Macromolecules* **1997,** *30,* 7348-7350.

58. Matyjaszewski, K.; Coca, S.; Gaynor, S. G.; Wei, M.; Woodworth, B. E. Controlled Radical Polymerization in the Presence of Oxygen. *Macromolecules* **1998,** *31,* 5967-5969.

59. Wang, J. S.; Matyjaszewski, K. Control1ed"Living" Radical Polymerization. Atom Transfer Radical Polymerization in the Presence of Transition-Metal Complexes. *J. Am. Chem. Soc.* **1995,** *117,* 5614-5615.

60. Kato, M.; Kamigaito, M.; Sawamoto, M.; Higashimura, T. Polymerization of Methyl Methacrylate with the Carbon Tetrachloride-l-Dichlorotris-(triphenylphosphine)ruthedum(II)/ Methylaluminum Bis(2,6-di-tert-butylphenoxide) Initiating System: Possibility of Living Radical Polymerization. *Macromolecules* **1996,** *28,* 1721-1723.

61. Ding, S.; Radosz, M.; Shen, Y. Ionic Liquid Catalyst for Biphasic Atom Transfer Radical Polymerization of Methyl Methacrylate. *Macromolecules* **2005,** *38,* 5921-5928.

62. Ando, T.; Kato, M.; Kamigaito, M.; Sawamoto, M. Living Radical Polymerization of Methyl Methacrylate with Ruthenium Complex: Formation of Polymers with Controlled Molecular Weights and Very Narrow Distributions. *Macromolecules* **1996,** *29,* 1070-1072.

63. Uegaki, H.; Kotani, Y.; Kamigaito, M.; Sawamoto, M. Nickel-Mediated Living Radical Polymerization of Methyl Methacrylate. *Macromolecules* **1997,** *30,* 2249-2253.

64. Stoffelbach, F.; Poli, F.; Richard, P. Half-sandwich molybdenum(III) compounds containing diazadiene ligands and their use in the controlled radical polymerization of styrene. *J. Organomet. Chem.* **2002,** *663,* 269-276.
65. Ding, S.; Radosz, M.; Shen, Y. Ionic Liquid Catalyst for Biphasic Atom Transfer Radical Polymerization of Methyl Methacrylate. *Macromolecules* **2005,** *38*, 5921-5928.
66. Kasko, A. M.; Heintz, A. M.; Pugh, C. The Effect of Molecular Architecture on the Thermotropic Behavior of Poly[11-(4′-cyanophenyl-4′′-phenoxy)undecyl acrylate] and Its Relation to Polydispersity. *Macromolecules* **1998,** *31*, 256-271.
67. Matyjaszewski, K.; Pintauer, T.; Gaynor, S. G. Removal of Copper-Based Catalyst in Atom Transfer Radical Polymerization Using Ion Exchange Resins. *Macromolecules* **2000,** *33*, 1476-1478.
68. Hatami, L.; Haddadi-Asl, V.; Roghani-Mamaqani, H.; Ahmadian-Alam, L.; Salami-Kalajahi, M. Synthesis and Characterization of Poly(Styrene-co-Butyl Acrylate)/Clay Nanocomposite Latexes in Miniemulsion by AGET ATRP. *Polym. Comp.* 2011, *32,* 967-975.
69. Min, K.; Jakubowski, W.; Matyjaszewski, K. AGET ATRP in the Presence of Air in Miniemulsion and in Bulk. *Macromol. Rapid Commun.* **2006,** *27,* 594–598.
70. Li, Q.; Zhang, L.; Zhang, Z.; Zhou, N.; Cheng, Z.; Zhu, X. Air-Tolerantly Surface-Initiated AGET ATRP Mediated by Iron Catalyst from Silica Nanoparticles. *J. Polym. Sci. A Polym. Chem.* **2010,** *48,* 2006–2015.
71. Li, W.; Matyjaszewski, K. Star Polymers via Cross-Linking Amphiphilic Macroinitiators by AGET ATRP in Aqueous Media. *J. Am. Chem. Soc.* **2009,** *131,* 10378–10379.
72. Liu, X. H.; Zhang, G. B.; Li, B. X.; Bai, Y. B.; Li, Y. S. Copper(0)-Mediated Living Radical Polymerization of Acrylonitrile: SET-LRP or AGET-ATRP. *J. Polym. Sci. A Polym. Chem.* **2010,** *48,* 5439–5445.
73. Zhu, G.; Zhang, L.; Zhang, Z.; Zhu, J.; Tu, Y.; Cheng, Z.; Zhu, X. Iron-Mediated ICAR ATRP of Methyl Methacrylate. *Macromolecules* **2011,** *44,* 3233–3239.
74. (a). Dhooge, D. R.; Konkolewicz, D.; Reyniers, M. F.; Marin, G. B.; Matyjaszewski, K. Kinetic Modeling of ICAR ATRP. *Macromol. Theory Simul.* **2012,** *21,* 52–69.(b) Abreu, C. M. R.; Serra, A. C.; Popov, A. V.; Matyjaszewski, K.; Guliashvili, T.; Coelho, J. F. J. Ambient temperature rapid SARA ATRP of acrylates and

methacrylates in alcohol–water solutions mediated by a mixed sulfite/Cu(II)Br_2 catalytic system. *Polym. Chem.* **2013,** *4,* 5629-5636.

75. Dong, H.; Matyjaszewski, K. ARGET ATRP of 2-(Dimethylamino)ethyl Methacrylate as an Intrinsic Reducing Agent. *Macromolecules* **2008,** *41,* 6868-6870.
76. Tanaka, K.; Matyjaszewski, K. Copolymerization of (Meth)acrylates with Olefins Using Activators Regenerated by Electron Transfer for Atom Transfer Radical Polymerization (ARGET ATRP). *Macromol. Symp.* **2008,** *261,* 1–9.
77. Dong, H.; Tang, W.; Matyjaszewski, K.; Well-Defined High-Molecular-Weight Polyacrylonitrile via Activators Regenerated by Electron Transfer ATRP. *Macromolecules* **2007,** *40,* 2974-2977.
78. Li, Y.; Lu, G.; ARGET ATRP of methyl methacrylate with 2-(8-heptadecenyl)-4,5-dihydro-1H-imidazole-1-ethylamine (OLC) as both ligand and reducing agent in the presence of air. *Colloid Polym. Sci.* **2010,** *288,* 1495–1500.
79. Nicola, R.; Kwak, Y.; Matyjaszewski, K. A Green Route to Well-Defined High-Molecular-Weight (Co)polymers Using ARGET ATRP with Alkyl Pseudohalides and Copper Catalysis. *Angew. Chem. Int. Ed.* **2010,** *49,* 541 –544.
80. Audouin, F.; Larragy, R.; Fox, M.; Connor, B. O.; Heise, A. Protein Immobilization onto Poly(acrylic acid) Functional Macroporous PolyHIPE Obtained by Surface-Initiated ARGET ATRP. *Biomacromolecules* **2012,** *13,* 3787−3794.
81. Chen, M.; Zhou, H.; Zhou, L.; Zhang, F. Confined polymerization: ARGET ATRP of MMA in the nanopores of modified SBA-15. *Polymer* **2017,** *114,* 180-188.
82. Krol, P.; Chmielarz, P. Synthesis of PMMA-b-PU-b-PMMA tri-block copolymers through ARGET ATRP in the presence of air. *Express Polym. Lett.* **2013,** *7,* 249–260.
83. Jeon, H. J.; Youk, J. H.; Ahn, S. H.; Choi, J. H.; Cho, K. S. Synthesis of High Molecular Weight 3-Arm Star PMMA by ARGET ATRP. Macromol. Res. **2009,** *17,* 240-244.
84. Kwak, Y.; Magenau, A. J. D.; Matyjaszewski, K. ARGET ATRP of Methyl Acrylate with Inexpensive Ligands and ppm Concentrations of Catalyst. *Macromolecules* **2011,** *44,* 811–819.
85. Chen, H.; Yang, L.; Liang, Y.; Hao, Z.; Lu, Z. ARGET ATRP of Acrylonitrile Catalyzed by FeCl3/Isophthalic Acid in the Presence of Air. *J. Polym. Sci. A Polym. Chem.* **2009,** *47,* 3202–3207.

86. Ma, W.; Otsukaa, H.; Takahar, A. Poly(methyl methacrylate) grafted imogolite nanotubes prepared through surface-initiated ARGET ATRP. *Chem. Commun.* **2011,** *47*, 5813–5815.
87. Dong, H.; Jakubowski, W.; Pietrasik, J.; Kusumo, A. Grafting from Surfaces for "Everyone": ARGET ATRP in the Presence of Air Krzysztof Matyjaszewski. *Langmuir* **2007,** *23,* 4528-4531.
88. Jakubowski, W.; Min, K.; Matyjaszewski, K. Activators Regenerated by Electron Transfer for Atom Transfer Radical Polymerization of Styrene. *Macromolecules* **2006,** *39,* 39-45.
89. Matyjaszewski, K.; Jakubowski, W.; Min, K.; Tang, W.; Huang, J.; Braunecker, W. A.; Tsarevsky, N. V. Diminished catalyst concentration in atom transfer radical polymerization with reducing agents. *Proc. Natl. Acad. Sci. U.S.A.* **2006,** *103,* 15309–15314.
90. MacLeod, P. J.; Veregin, R. P. N.; Odell, P. G.; Georges. M. K. Stable Free Radical Polymerization of Styrene: Controlling the Process with Low Levels of Nitroxide. *Macromolecules* **1997,** *30,* 2207-2208.
91. George, M. K.; Veregin, R. P. N.; Kazmaier, P. N.; Hamer, G. K. Narrow Molecular Weight Resins by a Free-Radical Polymerization Process. *Macromolecules* **1993,** *26,* 2987-2988.
92. Chevigny, C.; Gigmes, D.; Bertin, D.; Jestin, J.; Bou, F. Polystyrene grafting from silica nanoparticles via nitroxide-mediated polymerization (NMP): synthesis and SANS analysis with the contrast variation method. *Soft Matter*. **2009,** *5*, 3741–3753.
93. Enright, T. E.; Cunningham, M. F.; Keoshkeria, B. Nitroxide-Mediated Polymerization of Styrene in a Continuous Tubular Reactor. *Macromol. Rapid Commun.* **2005,** *26,* 221–22.
94. Fleischmann, S.; Komber, H.; Appelhans, D.; Voit, B. I. Synthesis of Functionalized NMP Initiators for Click Chemistry: A Versatile Method for the Preparation of Functionalized Polymers and Block Copolymers. *Macromol. Chem. Phys.* **2007,** *208,* 1050–1060.
95. Convertine, A. J.; Ayres, N.; Scales, C. W.; Lowe, A. B.; Cormick, C. L. M. Facile, Controlled, Room-Temperature RAFT Polymerization of N –Isopropylacrylamide. *Biomacromolecules* **2004,** *5,* 1177-1180.

96. Chiefari, J.; Chong, Y. K.; Ercole, F.; Krstina, J.; Jeffery, J.; Le, T. P. T.; Mayadunne, R. T. A.; Meijs, G. F.; Moad, C. L.; Moad, G.; Rizzardo, E.; Thang, S. H. Living free-radical polymerization by reversible addition - Fragmentation chain transfer: The RAFT process. *Macromolecules* **1998,** *31,* 5559−5562.

97. Barner-Kowollik, C.; Buback, M.; Charleux, B.; Coote, M. L.; Drache, M.; Fukuda, T.; Goto, A.; Klumperman, B.; Lowe, A. B.; Mcleary, J. B.; Moad, G.; Monteiro, M. J.; Sanderson, R. D.; Tonge, M. P.; Van, P. Mechanism and Kinetics of Dithiobenzoate-Mediated RAFT Polymerization. I. The Current Situation. *J. Polym. Sci. A Polym. Chem.* **2006,** *44*, 5809–5831.

98. Augustine, K. F.; Ribelli, T. G.; Fantin, M.; Krys, P.; Cong, Y.; Matyjaszewski, K. Activation of Alkyl Halides at the Cu0 Surface in SARA ATRP: An Assessment of Reaction Order and Surface Mechanisms. *J. Polym. Sci. A Polym. Chem.* **2017,** *55*, 3048-3057.

99. Stenzel, M. H.; Cummins, L.; Roberts, G. E.; Davis, T. P.; Vana, P.; Barner-Kowolli, C. Xanthate Mediated Living Polymerization of Vinyl Acetate: A Systematic Variation in MADIX/RAFT Agent Structure. *Macromol. Chem. Phys.* **2003,** *204*, 1160–1168.

100. Charmot, D.; Corpart, P.; Adam, H.; Zard, S. Z.; Biadatti, T.; Bouhadir, **G.** Controlled radical polymerization in dispersed media. *Macromol. Symp.* **2000,** *150,* 23−32.

101. Jitchum, V.; Perrier, S.; Living Radical Polymerization of Isoprene via the RAFT Process. *Macromolecules* **2007,** *40,* 1408-1412.

102. Fowler, I. C.; Muchemu, M. C.; Miller, E. R.; Phan, L.; Neill, O. C.; Jessop, G. P.; Cunningham, F. M. Emulsion Polymerization of Styrene and Methyl Methacrylate using Cationic Switchable Surfactants. Macromolecules **2011,** *44,* 2501-2509.

103. Shukla, S.; Rai, J. S. P. Synthesis and Characterization of Emulsion Polymerization of Acrylate Monomers. *World Scientific News* **2018,** *113,* 78-86.

104. Alhamad, B.; Romagnoli, J. A.; Gomes, V. G. Advanced modelling and optimal operating strategy in emulsion copolymerization: Application to styrene and MMA system. *Chem. Eng. Sci.* **2005,** *60,* 2795 – 2813.

105. Chern, C. S. Emulsion Polymerization Mechanisms and Kinetics. *Prog. Polym. Sci.* **2006,** *31,* 443–486.

106. Zheng, T.; Mauricio, T.; Fuente, S. L.; Liu, G. () Aqueous Emulsion of Conductive Polymer Binders for Si Anode Materials in Lithium Ion Batteries. *Eur. Polym. J.* **2019,** *114*, 265-270
107. Wang, X.; Sudol, E. D.; El-Aasser, M. S. Emulsion Polymerization of Styrene Using the Homopolymer of a Reactive Surfactant. *Langmuir* **2001,** *17*, 6865-6870.
108. Chieng, T. H.; Gan, L. M.; Chew, C. H.; Ng, S. C. Morphology of microporous polymeric materials by polymerization of methyl methacrylate and 2-hydroxyethyl methacrylate in microemulsions. *Polymer* **1995,** *36*, 1941-1946.
109. Fontenot, K.; Schork, F. J. Batch polymerization of methyl methacrylate in mini/macroemulsions. *J. Appl. Polym. Sci.* **1993,** *49*,633-655.
110. Quemener, L. F.; Subervie, D.; Savary, F. M.; Lalevee, J.; Lansalot, M.; Lami, E. B.; Emmanuel, L. E. Visible-light Emulsion Photopolymerization of Styrene. *Angew. Chem. Int.* **2018,** *57*,957-961.
111. Ulu, A.; Koytepe, S.; Ates, B. Design of starch functionalized biodegradable P(MAA-co-MMA) as carrier matrix for L-asparaginase immobilization. *Carbohydr. Polym.* **2016,** 153, 559-572.
112. Simmons, S.; Thomas, E. L. Structural characteristics of biodegradable thermoplastic starch/poly(ethylene–vinyl alcohol) blends. *J. Appl. Polym.* ***Sci.*** **1995,** *58*, 2259-2285.
113. Shi, Z.; Reddy, N.; Shen, L.; Hou, X.; Yang, Y. Effects of Monomers and Homopolymer Contents on the Dry and Wet Tensile Properties of Starch Films Grafted with Various Methacrylates. *J. Agric. Food Chem.* **2014,** *62*, 4668−4676.
114. Li, M. C.; Ge, X.; Cho, U. R. Emulsion grafting vinyl monomers onto starch for reinforcement of styrene-butadiene rubber. *Macromol. Res.* **2013,** *21*, 793-800.
115. Bhattacharya, A.; Rawlins, W. J.; Ray, P. Polymer Grafting and Crosslinking. John Wiley: Hoboken, NJ. **2009,** 3–89.
116. Moghaddam, P. N.; Fareghi, A. R.; Entezami, A. A.; Mehr, M. A. G. Synthesis of biodegradable copolymers based on starch by atom transfer radical polymerization (ATRP): Monolayer chain growth on starch. *Starch/Stärke* **2013,** *65*, 210–218.
117. Wang, L.; Wang, S.; Bei, J.Z. Synthesis and characterization of macroinitiator-amino terminated PEG and poly(γ-benzyl-L-glutamate)-PEO-poly(γ-benzyl-L-glutamate) triblock copolymer. *Polym. Adv. Technol.* **2004,** *15*, 617-621.
118. Tirelli, N.; Lutolf, M.P.; Napoli, A.; Hubbell. J.A. Poly(ethylene glycol) block copolymers. *Rev. Mol. Biotech.* **2002,** *90*, 3-15.

119. Duncan, R. The dawning era of polymer therapeutics *Nature Rev. Drug Disc*. **2003,** *2,* 347-360.

120. M. Sharpe, S. E. Easthope, G. M. Keating, and H. M. Lamb**,** Polyethylene glycol-liposomal doxorubicin: a review of its use in the management of solid and haematological malignancies and AIDS-related Kaposi's sarcoma. *Drugs* **2002,** *62***,** 2089-126.

121. Kim, K. H.; Kim, J.; Jo, W. H. Preparation of hydrogel nanoparticles by atom transfer radical polymerization of *N*-isopropylacrylamide in aqueous media using PEG macro-initiator. *Polymer* **2005,** *46,* 2836-2840.

122. Nagarajan, S.; Sabdham, K.; Srinivasan, V. Block copolymerization of poly(ethylene glycol) with methyl methacrylate using redox macroinitiators. *Die Angewandte Makromolekulare Chemie* **1997,** *245,* 9-22.

123. Koseva, N. S.; Novakov, C. P.; Rydz, J.; Kurcok, P.; Kowalczuk, M. Synthesis of a PHB-PEG Brush Co-polymers through ATRP in a Macroinitiator–Macromonomer Feed System and Their Characterization. *Des. Monomers Polym.* **2010**, *13,*579-595.

124. Jankova, K.; Chen, X.; Kops, J.; Batsberg, W. Synthesis of Amphiphilic PS-*b*-PEG-*b*-PS by Atom Transfer Radical Polymerization. *Macromolecules* **1998,** *31,* 538-541.

125. Nguyen, V. H.; Shim, J. J. Ionic liquid-mediated synthesis and self-assembly of poly (ethylene glycol)-block-polystyrene copolymer by ATRP method. *Colloid Polym. Sci.***2015,** *293,*617-623.

126. Yang, K. K.; Zheng, L.; Wang, Y. Z.; Zeng, J. B.; Wang, X. L.; Chen, S. C.; Zeng, Q.; Li, B. ABA triblock copolymers from poly(*p*-dioxanone) and poly(ethylene glycol). *J. Appl. Polym. Sci.***2006,** *102,* 1092-1097.

127. Kawalec, M.; Adamus, G.; Kurcok, P.; Kowalczuk, M. Synthesis of Poly[(R,S)-3-hydroxybutyrate- *block*-ethylene glycol-*block*-(R,S)-3-hydroxybutyrate] via Anionic ROP. *Macromol. Symp*. **2007,***253,* 59-64.

128. Garcia, M.; Beecham, M. P.; Kempe, K.; Haddleton, D. M.; Khan, A.; Marsh, A. Water soluble triblock and pentablock poly (methacryloyl nucleosides) from copper-mediated living radical polymerisation using PEG macroinitiators**.** *Eur. Polym. J.* **2015,** *66,*444-451.

129. Li, M.; Liu, P.; Zou, W.; Yu, L.; Xie, F.; Pu, H.; Liu, H.; Chen, L. Extrusion processing and characterization of edible starch films with different amylose contents. *J. Food Eng.* **2011,** *106,* 95–101.

130. Razi, A. F.; Qudsieh, I. Y. M.; Yunus, W. M. Z. W.; Ahmad, M. B.; Rahman, M. Z. A. Preparation and characterization of poly (methyl methacrylate) grafted sago starch using potassium persulfate as redox initiator. *J. Appl. Polym. Sci.* **2001,** *82,* 1375–1381.
131. Celik, M.; Sacak, M. Synthesis and characterization of starch-poly(methyl methacrylate) graft copolymers. *J. Appl. Polym. Sci.* **2002,** *86*, 53–57.
132. Parvin, F.; Rahman, M. A.; Islam, J. M. M.; Khan, M. A.; Saadat, A. H. M. Preparation and Characterization of Starch/PVA Blend for Biodegradable Packaging Material. *Adv. Mat. Res.* **2010,** *123*, 351-354.
133. Pan, D. D., Jane, J. L. Internal Structure of Normal Maize Starch Granules Revealed by Chemical Surface Gelatinization. *Biomacromolecules* **2001,** *1*, 126-132.
134. Bertoft, E. Understanding Starch Structure: Recent Progress. *Agronomy* **2017,** 7, 56-84.
135. Razi, A. F.; Qudsieh, I. Y. M.; Yunus, W. M. Z. W.; Ahmad, M. B.; Rahman, M. Z. A. Graft Copolymerization of Methyl Methacrylate onto Sago Starch Using Ceric Ammonium Nitrate and Potassium Persulfate as Redox Initiator Systems. *J. Appl. Polym. Sci.* **2001,** *82,* 1375–1381I.
136. Qudsieh, I. Y. M.; Razi, A. F.; Muyibi, S. A.; Ahmad, M. A.; Rahman, M. Z. A.; Yunus, W. M. W. Z. Preparation and Characterization of Poly(methyl methacrylate) Grafted Sago Starch Using Potassium Persulfate as Redox Initiator. *J. Appl. Polym. Sci.* **2004,** *94,* 1891–1897.
137. Jane, J. L. Current study on starch granule structures, *J. Appl. Glycosci.* **2006,** *53*, 205-213.
138. Oostergetel, G. T.; Bruggen, E. F. J. The crystalline domains in potato starch granules are arranged in a helical fashion. *Carbohydr. Polym.* **1993,** 21, 7-12.
139. Jane, J. L. Structure of Starch granules. *J. Appl. Glycosci.* **2007,** 54, 31-36.
140. Buleon, A.; Colonna, P.; Planchot, V.; Ball, S. Starch granules: Structure and biosynthesis. *Inter. J. Biol. Macromol.* **1998,** 23, 85-112.
141. Liu, Q.; Thompson, D. B. Effects of moisture content and different gelatinization heating temperatures on retrogradation of waxy-type maize starches. Carbohydr. Res. **1998,** *314*, 221–235
142. Shibanuma, K.; Takeda, Y.; Hizukuri, S. Shibata, Molecular structures of some wheat starches. S. *Carbohydr. Polym.* **1994,** *25, 111-116.*

143.Kaitha, B. S.; Jindala, R.; Janab, A. K.; Maitia, M. Development of corn starch based green composites reinforced with Saccharum spontaneum L fiber and graft copolymers – Evaluation of thermal, physico-chemical and mechanical properties. *Bioresou. Technol.* **2010,** *101,* 6843–6851.

144.Thitipraphunkul, K.; Uttapapa, D.; Piyachomkwan, K.; Takeda, Y. A comparative study of edible canna (Canna edulis) starch from different cultivars. Part I. Chemical composition and physicochemical properties. *Carbohydra. Polym.* **2003,** *53,* 317–324.

145.Kasemwong, K.; Piyachomkwan, K.; Wansuksri, R.; Srirot, K. Granule Sizes of Canna (Canna edulis) Starches and their Reactivity Toward Hydration, Enzyme Hydrolysis and Chemical Substitution. *Starch/Starke* **2008,** *60,* 624–633.

146.Chuenkamol, B.; Puttanlek, C.; Rungsardthong, V.; Uttapap, D. Characterization of low-substituted hydroxypropylated canna starch. *Food Hydrocoll.* **2007,** *21,* 1123–1132.

147.Waduge, R. N.; Kalinga, D. N.; Bertoft, E.; Seetharaman, K. Molecular Structure and Organization of Starch Granules from Developing Wheat Endosperm. *Cereal Chem.* **2014,** *91,* 578–586.

148.Jane, J. L. Structure of starch granules. *J. Appl. Glycosci.***2007,** 54, 31-36.

149.Hung, P. V.; Morita, N. Physicochemical properties of hydroxypropylated and cross-linked starches from A-type and B-type wheat starch granules. *Carbohydr. Polym.* **2005,** *59,* 239–246.

150.Singh, N.; Kaur, L. Morphological, thermal, rheological and retrogradation properties of potato starch fractions varying in granule size. *J. Sci. Food Agric.* **2004,** *84,* 1241–1252.

151.Noda, T.; Takigawa, S.; Endo, S. M.; Kima, S. J.; Hashimoto, N.; Yamauchia, H.; Hanashiro, I.; Takeda, Y. Physicochemical properties and amylopectin structures of large, small, and extremely small potato starch granules. *Carbohydr. Polym.* **2005,** *60,* 245–251.

152.Gonzalez, Z.; Perez, E. Effect of Acetylation on Some Properties of Rice Starch. *Starch/Starke* **2002,** *54,* 148–154.

153.Singh, N.; Nakaura, Y.; Inouchic, N.; Nishinari, K. Structure and Viscoelastic Properties of Starches Separated from Different Legume. *Starch/Starke* **2008,** *60,* 49–35.

154.a) Faki, H. A. E.; Desikachar, H. S. R.; Paramahans, S. V.; Tharanathan, R. N. Physico-chemical Characteristics of Starches from Chick Pea, Cow Pea and Horse Gram. *Starch/Starke* **1983,** *35,* 118-122. b) Hoover, R.; Sosulski, F. Studies on the Functional Characteristics and Digestibility of Starches from *Phaseolus vulgaris* Biotypes. *Starch* **1985**, *37,* 181-191. c) Yoshida, T.; Jones, L. E.; Ellner, S. P.; Fussmann, G. F.; Jr, N. G. H. Rapid evolution drives ecological dynamics in a predator–prey system. *Nature* **2003,** *424*, 303–306.

155. Sung, W. C.; Ston, M. Characterization of Legume Starches and their Noodle Quality. *J. Mar. Sci. Technol.* **2004,** *12,* 25-32.

156. Huang, J.; Schols, H.; Jin, Z.; Sulmann, E.; Voragen, A. G. J. Characterization of differently sized granule fractions of yellow pea, cowpea and chickpea starches after modification with acetic anhydride and vinyl acetate. *Carbohydr. Polym.* **2007,** *67*, 11–20.

157. Pan, D. D.; Jane, J. L. Internal Structure of Normal Maize Starch Granules Revealed by Chemical Surface Gelatinization. *Biomacromolecules* **2000,** *1,* 126-132.

158.a) Jane, J. L.; Kasemsuwan, T.; Leas, S.; Ames, I. A.; Zobel, H.; Darien, I. L.; Robyt, J. F.; Ames, I. A. Anthology of Starch Granule Morphology by Scanning Electron Microscopy. *Starch/Starke* **1994**, *46,* 121-129. b) Kang, M. Y.; Sugimoto, Y.; Kato, I.; Sakamoto, S.; Fuwa, H. Some Properties of Large and Small Starch Granules of Barley (Hordeum vulgare L.). *Agric. Biol. Chem.* **1985,** *49,* 1291-1297.

159. Singh, J.; Singh, N. Studies on the morphological, thermal and rheological properties of starch separated from some Indiana potato cultivators. *Food Chem.* **2001,** *75,* 67-77.

160. Celik, M.; Sacak, M. Synthesis and Characterization of Starch-Poly(methyl methacrylate) Graft Copolymers. *J. Appl. Polym. Sci.* **2002,** *86,* 53–57.

161. Wang, L.; Shen, J.; Men, Y.; Wu, Y.; Peng, Q.; Wang, X.; Yang, R.; Mahmood, K.; Liu, Z. Corn starch-based graft copolymers prepared via ATRP at the molecular level. *Polym. Chem.* **2015,** *6,* 3480-3488.

162. Senn, M. M.; Zaman, K.; Ghazali, Z.; Hashim, K. Radiation Graft Co-polymerization of Methacrylic Acid (MAA) onto Sago Starch Films. *Polymer Plast. Tech. Eng.* **2005,** *44,* 1173–1187.

163. Jobling, S. Improving starch for food and industrial applications. *Current Opin. Plant Biol.* **2004,** *7,* 210-218.

164. Wang, X.; Yang, R.; Huang, L.; Li, J.; Liu, Z. Preparation of starch-graft-poly(methyl methacrylate) via SET-LRP at molecular level and its self-assembly. *Polymer* **2019,** 173, 11-19.
165. Shi, Z.; Reddy, N.; Shen, L.; Hou, X.; Yang, Y. Effects of Monomers and Homopolymer Contents on the Dry and Wet Tensile Properties of Starch Films Grafted with Various Methacrylates. *J. Agric. Food Chem.* **2014,** *62,* 4668−4676.
166. Moorthy, S. N. Trpical sources of starch. Starch in food: structure, functional and applications, 2004, 321-359.
167. Simmons, S.; Thomas, E. L. Structural characteristics of biodegradable thermoplastic starch/poly(ethylene-vinyl alcohol) blends. *J. Appl. Polym. Sci.* **1995,** *58*, 2259-2285.
168. Mali, S.; Victoria, M.; Grossmann, E.; Garcia, M. A.; Martino, M. N.; Zaritzky, N. E. Microstructural characterization of yam starch films. *Carbohydr. Polym.* **2002,** *50,* 379-386.
169. Dole, P.; Joly, C.; Espuche, E.; Alric, I.; Gontard, N. Gas transport properties of starch based films. *Carbohydr. Polym.* **2004,** *58*, 335-343.
170. Chulim, M. V. M.; Perez, F. B.; Escamilla, G. C. Biodegradation of starch and acrylic-grafted starch by Aspergillus niger. *J. Appl. Polym. Sci.* **2003,** 89, 2764–2770.
171. Chulim, M. V. M.; Perez, F. B.; Escamilla, G. C. Biodegradation of Starch and Acrylic-Grafted Starch by *Aspergillus niger*. *J. Appl. Polym. Sci.* **2001,** *82,* 1375–1381.
172. Sekar, S., Ojha, K. M., Sankar, S., Sastry, T. P. Preparation and Partial Characterization of Sago Starch Based Graft Co-Polymers. *Int. J. Pharm.* **2015,** *4,* 385-395.
173. Brinks, M. K.; Studer, A. Polymer Brushes by Nitroxide-Mediated Polymerization. *Macromol. Rapid Commun.* **2009,** *30,* 1043-1057.
174. Cazotti, J. C.; Fritz, A. T.; Valdez, O. G.; Smeets, N. M. B.; Dub, E. M. A.; Cunningham, M. F. Grafting from Starch Nanoparticles with Synthetic Polymers via Nitroxide-Mediated Polymerization *Macromol. Rapid Commun.* **2019,** *40,* 1800834-1800838.
175. Han, T. L.; Kumar, R. N.; Rozman, H. D.; Noor, M. A. M. N. GMA grafted sago starch as a reactive component in ultra violet radiation curable coatings *Carbohydr. Polym.* **2003,** *54*, 509-516.

176. Nurmi, L.; Holappa, S.; Mikkonen, H.; Seppala, J. Controlled grafting of acetylated starch by atom transfer radical polymerization of MMA. *Eur. Polym. J.* **2007,** *43,* 1372–1382.
177. Bansal, A.; Kumar, A.; Latha, P. P.; Ray, S. S.; Chatterjee, A. K. Expanded Corn Starch as a versatile material in atom transfer radical polymerization (ATRP) of styrene and methyl methacrylate. *Carbohydr. Polym.* **2015,** *130,* 290-298.
178. Handayani, A. S.; Sulistyati, I.; Chalid, M.; Budianta, E.; Priadi, D. Synthesis of Amylopectin Macro-initiator for Graft Copolymerization of Amylopectin-g-Poly (Methyl Methacrylate) by ATRP (Atom TransferRadical Polymerization). *Mater. Sci. Forum* **2014,** *827,* 306-310.
179. (a) Rabea, A. M.; Zhu, S. Controlled radical polymerization at high conversion: Bulk ICAR ATRP of methyl methacrylate. *Ind. Eng. Chem. Res.* **2014,** *53*, 3472−3477; (b) Haloi, D. J.; Ata, S.; Singha, NK, et al. Acrylic AB and ABA block copolymers based on poly(2-ethylhexyl acrylate) (PEHA) and poly(methyl methacrylate) (PMMA) via ATRP. *ACS Appl. Mater. Interfaces* **2012,** *4,* 4200−4207; (c) Kwak, Y.; Matyjaszewski, K. ARGET ATRP of methyl methacrylate in the presence of nitrogen-based ligands as reducing agent. *Polym. Int.* **2009,** *58*, 242–247.
180. Tsarevsky, N. V.; Matyjaszewski, K. Green atom transfer radical polymerization: From process design to preparation of well defined environmentally friendly polymeric materials. *Chem. Rev.* **2007,** *107,* 2270–2299.
181. D'Hooge, D. R.; Steenberge, P. H. M. V.; Reyniers, M. F.; Marin, G. B. The strength of multi-scale modeling to unveil the complexity of radical polymerization. *Prog. Polym. Sci.* **2016,** *58,* 59–89.
182. D'Hooge, D. R.; Steenberge, P. H. M. V.; Derboven, P.; Reyniers, M. F.; Marin, G. B. Model-based design of the polymer microstructure: Bridging the gap between polymer chemistry and engineering. *Polym. Chem.* **2015,** *6,* 7081–7096.
183. Chan, N.; Cunningham, M. F.; Hutchinson, R. A. ARGET ATRP of methacrylates and acrylates with stoichiometric ratios of ligand to copper. *Macromol. Chem. Phys.* **2008,** *209,* 1797–1805.
184. Matyjaszewski, K.; Tsarevsky, N. V.; Braunecker, W. A. et al. Role of Cu^0 in controlled/"living" radical polymerization. *Macromolecules* **2007,** *40,* 7795–7806.
185. Matyjaszewski, K.; Jia, J. Atom transfer radical polymerization. *Chem. Rev.* **2001,** *101,* 2921−2990.

186. Steenberge, P. H. M. V.; D'hooge, D.M R.; Wang, Y. et al. Linear gradient quality of ATRP copolymer. *Macromolecules* **2012,** *45,*8519−8531.

187. Rahimi-Razin, S.; Haddadi-Asl, V.; Salami-Kalajahi, M.; Sadabad, B. F.; Roghani-Mamaqani, H. Matrix-grafted multiwalled carbon nanotubes/poly(methyl methacrylate) nanocomposites synthesized by in situ RAFT polymerization: A kinetic study. *Int. J. Chem. Kinet.* **2012,** *44*, 555–569.

188. Rybel, N. D.; Steenberge, P. H. M. V.; Reyniers, M. F.; Kowollik, C. B.; D'hooge, D. R.; Marin, G. B. An update on the pivotal role of kinetic modeling for the mechanistic understanding and design of bulk and solution RAFT polymerization. *Macromol. Theory Simul.* **2016,** *26,* 1600048-1600067.

189. Rybel, N. D.; Steenberge, P. H. M. V.; Reyniers, M. F.; D'hooge, D. R.; Marin, G. B. How chain length dependencies interfere with the bulk RAFT polymerization rate and microstructural control. *Chem. Eng. Sci.* **2018,** *177*, 163–179.

190. Steenberge, P. H. M. V.; D'hooge, D. R.; Reyniers, M. F.; Marin, G. B.; Cunningham, M. F. 4-dimensional modeling strategy for an improved understanding of miniemulsion NMP of acrylates initiated by SG1- macroinitiator. *Macromolecules* **2014,** *47*, 7732–7741.

191. Bai, L.; Zhang, L.; Cheng, Z.; Zhu, X. Activators generated by electron transfer for atom transfer radical polymerization: Recent advances in catalyst and polymer chemistry. *Polym. Chem.* **2012,** *3*, 2685– 2697.

192. Haloi, D. J.; Roy, S.; Singha, N. K. Copper catalyzed atom transfer radical copolymerization of glycidyl methacrylate and 2-ethylhexyl acrylate. *J. Polym. Sci. Part A: Polym. Chem.* **2009,** *47*, 6526–6533.

193. Braunecker, W. A.; Matyjaszewski, K. Controlled/living radical polymerization: Features, developments, and perspectives. *Prog. Polym. Sci.* **2007,** *32,* 93–146.

194. Matyjaszewski, K. (Ed.). Controlled/Living Radical Polymerization: Progress in ATRP, NMP, and RAFT. ACS Symposium Series, 768. Washington, DC: ACS; 2000.

195. (a) Matyjaszewski, K. Atom transfer radical polymerization (ATRP): Current status and future perspectives. *Macromolecules* **2012,** *45,* 4015–4039; (b) Datta, H.; Singha, N. K. Atom transfer radical polymerization of hexyl acrylate; preparation of all-acrylate block copolymer. *J. Polym. Sci. Part A: Polym. Chem.* **2008,** *46,* 3499–3511.

196. (a) Shipp, D. A.; Wang, J-L.; Matyjaszewski, K. Synthesis of acrylate and methacrylate block copolymers using atom transfer radical polymerization.

Macromolecules **1998,** *31,* 8005–8008; (b) Singha, N. K.; Ruiter, B.; Schubert, U. S. Atom transfer radical polymerization of 3-ethyl-3acryloyloxy methyloxetane. *Macromolecules* **2005,** *38,* 3596–3600.

197. Zhang, Y.; Wang, Y.; Matyjaszewski, K. ATRP of methyl acrylate with metallic zinc, magnesium, and iron as reducing agents and supplemental activators. *Macromolecules* **2011,** *44*, 683–685.

198. Jakubowski, W.; Matyjaszewski, K. Activators regenerated by electron transfer for atom-transfer radical polymerization of (meth)acrylates and related block copolymers. *Angew. Chem.* **2006,** *118,* 4594–4598.

199. (a) Payne, K. A.; D'hooge, D. R.; Steenberge, P. H. M. V. et al. ARGET ATRP of butyl methacrylate: Utilizing kinetic modeling to understand experimental trends. *Macromolecules* **2013,** *46*, 3828–3840; (b) Hatami, L.; Haddadi-Asl, V.; Ahmadian-Alam, L.; Roghani-Mamaqani, H.; Salami-Kalajahi, M. Effect of nanoclay on styrene and butyl acrylate AGET ATRP in miniemulsion: Study of nucleation type, kinetics, and polymerization control. *Int. J. Chem. Kinet.* **2013,** *45*, 221–235; (c) Ahmadian-Alam, L.; Haddadi-Asl, V.; Hatami-Hossein, L.; Roghani-Mamaqani, H.; Salami-Kalajahi, M. Kinetic study of in situ normal and AGET atom transfer radical copolymerization of nbutyl acrylate and styrene: Effect of nanoclay loading and catalyst concentration. *Int. J. Chem. Kinet.* **2012,** *44*, 789–799.

200. Payne, K. A.; Steenberge, P. H. M. V.; D'hooge, D. R. et al. Controlled synthesis of poly[(butyl methacrylate)-co-(butyl acrylate)] via activator regenerated by electron transfer atom transfer radical polymerization: Insights and improvement. *Polym. Int.* **2014**, *63*, 848–857.

201. Boyer, C.; Corrigan, A. N.; Jung, K. et al. Copper-mediated living radical polymerization (atom transfer radical polymerization and copper(0) mediated polymerization): From fundamentals to bioapplications. *Chem. Rev.* **2016,** *116*, 1803–1949.

202. Fierens, S. K.; Steenberge, P. H. M. V.; Reyniers, M. F.; Marin, G. B.; D'hooge, D. R. How penultimate monomer unit effects and initiator influence ICAR ATRP of n-butyl acrylate and methyl methacrylate. *AIChE J.* **2017,** *63*, 4721–5234.

203. D'hooge, D. R.; Steenberge, P. H. M. V.; Reyniers, M. F.; Marin, G. B. Fed batch control and visualization of monomer sequences of individual ICAR ATRP gradient copolymer chains. *Polymers* **2014,** *6*, 1074– 1095.

204. Porras, C. T.; D'hooge, D. R.; Steenberge, P. H. M. V.; Reyniers, M. F.; Marin, G. B. A theoretical exploration of the potential of ICAR ATRP for one- and two-pot synthesis of well-defined diblock copolymers. *Macromol. React. Eng.* **2013,** 7, 311–326.

205. Porras, C. T.; D'hooge, D. R.; Steenberge, P. H. M. V.; Reyniers, M. F.; Marin, G. B. ICAR ATRP for estimation of intrinsic macroactivation/deactivation Arrhenius parameters under polymerization conditions. *Ind. Eng. Chem. Res.* **2014,** *53,* 9674−9685.

206. (a) Jakubowski, W.; Min, K.; Matyjaszewski, K. Activators regenerated by electron transfer for atom transfer radical polymerization of styrene. *Macromolecules* **2006,** *39,* 39–45; (b) Jakubowski, W.; Matyjaszewski, K. Activators generated by electron transfer for atom transfer radical polymerization. *Macromolecules* **2005**, *38,* 4139–4146.

207. Hornby, B. D.; West, A. G.; Tom, J. C.; Waterson, C.; Harrisson, S.; Perrier, S. Copper(0)-mediated living radical polymerization of methylmethacrylate in a non-polar solvent. *Macromol. Rapid Commun.* **2010,** *31*, 1276–1280.

208. Ali, U.; Karim, K. J. B. A.; Buang, N. A. A review of the properties and applications of poly (methyl methacrylate) (PMMA). *Polym. Rev.* **2015,** *55*, 678–705.

209. Mccord, E. F.; Anton, W. L.; Wilczek, L. et al. ^{1}H and 13CNMR of PMMA macro monomersand oligomers — end groups and tacticity. *Macromol. Symp.* **1994,** *86*, 47–64.

210. Ghosh, P.; Das, T.; Nandi, D. J. Synthesis characterization and viscosity studies of homopolymer of methyl methacrylate and copolymer of methyl methacrylate and styrene. *J. Solution Chem.* **2011,** *40*, 67–78.

211. Simakova, A.; Averick, S. E.; Konkolewicz, D.; Matyjaszewski, K. Aqueous arget ATRP. *Macromolecules* **2012,** *45*, 6371–6379.

212. Wang, Y.; Matyjaszewski, K. ATRP of MMA in polar solvents catalyzed by FeBr2 without additional ligand. *Macromolecules* **2010,** *43,* 4003–4005.

213. Fuente, de la J. L.; Fernμndez-Sanz, M.; Fernμndez-García, M.; Madruga, E. L. Solvent effects on the synthesis of poly(methyl methacrylate) by atom-transfer radical polymerization (ATRP). *Macromol. Chem. Phys.* **2001,** *202,* 2565–2571.

214. Haloi, D. J.; Singha, N. K. Synthesis of poly(2-ethylhexyl acrylate)/clay nanocomposites by in situ living radical polymerization. *J. Polym. Sci, A: Polym. Chem*. **2011,** *49,* 1564–1571.

215. Bawk, C. E. H.; Jakes, W. H.; North, A. M. Low temperature polymerization of methyl methacrylate initiated by ethyl silver. *J. Polym. Sci.* **1962,** *58,* 335–350.

216. Anderson, D. B.; Burnette, G. M.; Gowan, A. C. Some novel effects in solution polymerization. *J. Polym. Sci.* **1963,** *1,* 1465–1470.

217. Burnette, G. M.; Dailey, W. S.; Pearson, J. M. Radical polymerization in halogenated solvents. Part 1.—Methyl methacrylate polymerization initiated by azoisobutyronitrile. *Trans. Faraday Soc.* **1966,** *1,* 1216– 1225.

218. (a) Henrici-Olive, G.; Olive, S. Z. About the influence of solvents in the radical polymerization III. Electron-donor-acceptor complexes between polymer radicals and solvent molecules and their effect on kinetic. *Phys. Chem.* **1965,** *47,* 286–298; (b) Henrici-Olive, G.; Olive, S. Z. About the solvent influence on the radical. IV. Electron donor acceptor complexes in styrene polymerization. Phys Chem. **1966,** *48,* 35–50; (c) Henrici-Olive, G.; Olive, S. For the polymerization of methyl methacrylates in bromo benzene. *Makromolek. Chem.* **1966,** *96,* 221–226.

219. Bamford, C. H.; Brumby, S. The effect of aromatic solvents on the absolute rate coefficients in the polymerization of methyl methacrylate at 25 ºC. *Makromolek. Chem.* **1967,** *105,* 122–131.

220. Burnett, G. M.; Cameron, G. G.; Zafar, M. M. Polymerization of methyl methacrylate in solution. *Eur. Polym. J.* **1970,** *6,* 823–830.

221. Hajifatheali, H.; Ahmadi, E.; Marefat, M. Synthesis of N-benzyl-2-(dodecylthio)-N-(2-(dodecylthio) ethyl) ethanamine: new ligand for block copolymerization of styrene and methyl methacrylate using ATRP. *J. Polym. Res.* **2020,** *27,* 22–30.

222. Deoghare, C.; Srivastava, H.; Behera, R. N.; Chauhan, R. Microstructure analysis of copolymers of substituted itaconimide and methyl methacrylate: experimental and computational investigation. *J. Polym. Res.* **2019,** *26,* 204–218.

223. Rabea, A. M.; Zhu, S. Modeling the influence of diffusioncontrolled reactions and residual termination and deactivation on the rate and control of bulk ATRP at high conversions. *Polymers* **2015,** *7,* 819–835.

224. Grishin, I. D.; Stakhi, S. A.; Kurochkina, D. Y.; Grishin, D. F. () Controlled copolymerization of acrylonitrile with methyl acrylate and dimethyl itaconate via ARGET ATRP mechanism. *J. Polym. Res.* **2018,** *25,* 261–268.
225. Ahmadian-Alam, L.; Haddadi-Asl, V.; Roghani-Mamaqani, H.; Hatami, L.; Salami-Kalajahi, M. Use of clay-anchored reactive modifier for the synthesis of poly (styrene-co-butyl crylate)/clay nanocomposite via in situ AGET ATRP. *J. Polym. Res.* **2012,** *19,* 9773– 9784.
226. Izunobi, J. U.; Higginbotham, C. L. Polymer molecular weight analysis by ^{1}H NMR spectroscopy. *J. Chem. Educ.* **2011,** *88,* 1098–1104
227. Brar, A. S.; Singh, G.; Shankar, R. Structural investigations of poly(methyl methacrylate) by two-dimensional NMR. *J. Mol. Struct.* **2004,** *703*, 69–81.
228. Miri, M. J.; Pritchard, B. P.; Cheng, H. N. A Versatile approach for modelling and simulating the tacticity of polymers. *J. Mol. Model* **2011,** *17*, 1767–1780.
229. Ghosh, P.; Das, T.; Nandi, D. Synthesis characterization and viscosity studies of Homopolymer of methyl methacrylate and copolymer of methyl methacrylate and styrene. *J. Solut. Chem.* **2011,** *40,* 67– 78.
230. Quinting, G.; Cai, R. High-Resoltion NMR analysis of the Tacticity of poly(n-butyl methacrylate). *Macromolecules* **1994,** *27,* 6301–6306
231. Bujak, P.; Henzel, N.; Matlengiewicz, M. Microstudy study of poly(tert-butyl acrylate) by 13C NMR spectroscopy. *J. Polym. Anal. Charact.* **2007,** *12,* 431–443.
232. Mcbriety, V. J.; Douglass, D. C.; Kwei, T. K. Compatibility in blends of poly(methyl methacrylate) and poly(styrene-co-acrylonitrile). 2. An NMR study. *Macromolecules* **1978,** *11*, 1265–1267.
233. Nguyen, G.; Nicole, D.; Swistek, M.; Matlengiewicz, M.; Wiegert, B. () Sequence distribution of the methyl methacrylate-ethyl acrylate copolymer by 13C NMR spectroscopy. *Polymer* **1997,** *38,* 3455– 3461.
234. Pasich, M.; Henzel, N.; Matlengiewicz, M. Sequence distribution of poly(methyl acrylate)by incremental calculation. *Int. J. Polym. Anal. Charact.* **2013,** *18,* 105–118.
235. Brar, A. S.; Goyal, A. K.; Hooda, S. Two dimensional NMR studies of acrylate copolymers. *Pure Appl. Chem.* **2009,** *81,* 389–415.
236. McCord, E. F.; Anton, W. L.; Wilczek, L.; Ittel, S. D.; Nelson, L. T. J.; Raffell, K. D.; Hanson, J. E.; Berge, C. ^{1}H and ^{13}C NMR of PMMA macromonomers and oligomers-end group and tacticity. *Macromol. Symp.* **1994,** *86,* 47–64.

237.Kotyk, J. J.; Berger, P. A.; Remsen, E. E. Microstructure characterization of poly(methyl methacrylate)using proton-detected heteronuclear shift-correlated NMR spectroscopy. *Macromolecules* **1990,** *23,* 5167–5169.

238.Kawamura, T.; Toshima, N.; Matsuzaki, K. Assignments of finely resolved 13C NMR spectra of poly(methyl methacrylate). *Makromol. Chem. Rapid Commun.* **1993,** *14,* 719–724.

239.Cheng, S. K.; Wang, C. C.; Chen. C. Y. Synthesis of block copoly(polyethylene glycol-styrene) by the macromonomer and macroinitiator method. *Mater. Chem. Phys.* **2003,** *78*, 581-590.

240. Liang, Y. H.; Wang, C. C.; Chen, C. Y. Conductivity and characterization of plasticized polymer electrolyte based on (polyacrylonitrile-*b*-polyethylene glycol) copolymer. *J. Power Sources* **2007,** *172*, 886-892.

241.Baglan, M.; Yildiko, U.; Cakmak, I.; Tekes, A. T. Synthesis of PMMA-b-PEG-b-PMMA by controlled Polymerization Using Macro-RAFT Agents. Igdır Univ. J. Inst. Sci. & Tech. **2018,** *8*, 243-254.

242.Dhar, A.; Singh, U.; Koiry, B. P.; Baishya, B.; Haloi. D. J. Investigation of microstructure in poly (methyl methacrylate) prepared via ambient temperature ARGET-ATRP: a combined approach of 1D and 2D NMR spectroscopy. *J. Polym. Res.* **2020**, *27*, 174-182.

243.Kisku, S.K.; Swain, S. K. Study of oxygen permeability and flame retardancy properties of biodegradable polymethyl methacrylate/Starch composites. *Polym. Compos.* 2012, *33*, 79-84.

244.Sangramsingh, N. M.; Patra, B. N.; Singh, B. C.; Patra, C. M. Graft copolymerization of methyl methacrylate onto starch using a Ce(IV)–glucose initiator system. *J. Appl. Polym. Sci.* 2004, *91*, 981-990.

245.Nakason, C.; Kaesaman, A.; Eardrod, K. Cure and mechanical properties of natural rubber-g-poly(methyl methacrylate)–cassava starch compounds. *Mater. Lett.* **2005,** *59*, 4020-4025.

246.Taghi, M. T.Z.; Khosravi, M. Kinetics and Mechanism of Graft Copolymerization of Vinyl Monomers (Acrylamide, Acrylic Acid, and Methacrylate) onto Starch by Potassium Dichromate as Redox Initiator. *Iran. Polym. J.* **2003,** *12*, 497-505.

247. Baishya, P.; Maji, T. K. Studies on Effects of Different Cross-Linkers on the Properties of Starch-Based Wood Composites. *ACS Sustain. Chem. Eng.* 2014, 2, 1760-1768.

248. Zimmermann, T.; Pohler, E.; Geiger, T. Cellulose Fibrils for Polymer Reinforcement *Adv. Eng. Mater.* 2004, *6*, 754-761.

249. Aoi, K.; Takasu, A.; Tsuchiya, M.; Okada, M. New chitin-based polymer hybrids, Miscibility of chitin-*graft*-poly(2-ethyl-2-oxazoline) with poly(vinyl alcohol)**.** *Macromol. Chem. Phys.* 1998, *199*, 2805-2811.

250. Parvin, F.; Rahman, Md. A.; Islam, J. M. M.; Khan, M. A.; Saadat, A. H. M. Preparation and Characterization of Starch/PVA Blend for Biodegradable Packaging Material. *Mater. Adv. Mater. Res.* **2010,** *123-125,* 351-354.

251. Shaikh, M. M.; Lonikar, S. V. Starch–acrylics graft copolymers and blends: Synthesis, characterization, and applications as matrix for drug delivery**.** *J. Appl. Polym. Sci.* 2009, *114*, 2893-2900.

252. Arfat, Y. A.; Ejaz, M.; Jacob, H.; Ahmed, J. Deciphering the potential of guar gum/Ag-Cu nanocomposite films as an active food packaging material. *Carbohydr. Polym.* **2017,** *157*, 65–71.