Supporting Information

Molecular Weight Distribution of Polymers Produced by Anionic Polymerization Enables Mixability Evaluation

Yuta Endo,[1,2] Mai Furusawa,[1,3] Toshiya Shimazaki,[1,4] Yusuke Takahashi,[6] Yuichi Nakahara,[1,5] and Aiichiro Nagaki[1,6]*

[1] Micro Chemical Production Study Consortium in Kyoto University, Kyoto University, Nishikyo-ku, Kyoto 615-8510, Japan, [2] Isolation And Purification Group, Process Development Section, Process Development Labs, Research Institute For Bioscience Products & Fine Chemicals, Ajinomoto Co., Inc., 1-1 Suzuki-cho, Kawasaki-ku, Kanagawa 210-8681, Japan, [3] Oppama Research Laboratory, Toho Chemical Industry Co., Ltd., 5-2931, Urago-cho, Yokosuka-shi, Kanagawa 237-0062, Japan, [4] Tacmina Co. 2-2-14 Awajimachi, Chuo-ku, Osaka 541-0047, Japan, [5] New Frontiers Research Group, Frontier Research Labs., Institute For Innovation, Ajinomoto Co., Inc., 1-1 Suzuki-cho, Kawasaki-ku, Kanagawa 210-8681, Japan, [6] Department of Synthetic Chemistry and Biological Chemistry, Graduate School of Engineering, Kyoto University, Nishikyo-ku, Kyoto 615-8510, Japan

- Size exclusion chromatography data for all polymers with the calibration using standard polystyrene samples, and, explaining the results of Dushman reaction data -

Figure S-1. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 7.5 mL/min, flow rate of Styrene (2.0 M) = 15.0 mL/min, T-250-250 mixer, 30 degree-C)
Figure S-2. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 5.0 mL/min, flow rate of Styrene (2.0 M) = 10.0 mL/min, T-250-250 mixer, 30 degree-C)
Figure S-3. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 4.0 mL/min, flow rate of Styrene (2.0 M) = 8.0 mL/min, T-250-250 mixer, 30 degree-C)
Figure S-4. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 3.0 mL/min, flow rate of Styrene (2.0 M) = 6.0 mL/min, T-250-250 mixer, 30 degree-C)
Figure S-5. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 2.0 mL/min, flow rate of Styrene (2.0 M) = 4.0 mL/min, T-250-250 mixer, 30 degree-C)
Figure S-6. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 1.0 mL/min, flow rate of Styrene (2.0 M) = 2.0 mL/min, T-250-250 mixer, 30 degree-C)
Figure S-7. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 0.5 mL/min, flow rate of Styrene (2.0 M) = 1.0 mL/min, T-250-250 mixer, 30 degree-C)
Figure S-8. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 7.5 mL/min, flow rate of Styrene (2.0 M) = 15.0 mL/min, T-250-250 mixer, 0 degree-C)
Figure S-9. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 5.0 mL/min, flow rate of Styrene (2.0 M) = 10.0 mL/min, T-250-250 mixer, 0 degree-C)
Figure S-10. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 4.0 mL/min, flow rate of Styrene (2.0 M) = 8.0 mL/min, T-250-250 mixer, 0 degree-C)
Figure S-11. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 3.0 mL/min, flow rate of Styrene (2.0 M) = 6.0 mL/min, T-250-250 mixer, 0 degree-C)
Figure S-12. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 2.0 mL/min, flow rate of Styrene (2.0 M) = 4.0 mL/min, T-250-250 mixer, 0 degree-C)
Figure S-13. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 1.0 mL/min, flow rate of Styrene (2.0 M) = 2.0 mL/min, T-250-250 mixer, 0 degree-C)
Figure S-14. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 0.5 mL/min, flow rate of Styrene (2.0 M) = 1.0 mL/min, T-250-250 mixer, 0 degree-C)
Figure S-15. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 7.5 mL/min, flow rate of Styrene (2.0 M) = 15.0 mL/min, T-250-250 mixer, -20 degree-C)
Figure S-16. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 5.0 mL/min, flow rate of Styrene (2.0 M) = 10.0 mL/min, T-250-250 mixer, -20 degree-C)

Figure S-17. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 4.0 mL/min, flow rate of Styrene (2.0 M) = 8.0 mL/min, T-250-250 mixer, -20 degree-C)

Figure S-18. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 3.0 mL/min, flow rate of Styrene (2.0 M) = 6.0 mL/min, T-250-250 mixer, -20 degree-C)

Figure S-19. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 2.0 mL/min, flow rate of Styrene (2.0 M) = 4.0 mL/min, T-250-250 mixer, -20 degree-C)

Figure S-20. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 1.0 mL/min, flow rate of Styrene (2.0 M) = 2.0 mL/min, T-250-250 mixer, -20 degree-C)

Figure S-21. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 7.5 mL/min, flow rate of Styrene (2.0 M) = 15.0 mL/min, T-500-500 mixer, 30 degree-C)

Figure S-22. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 5.0 mL/min, flow rate of Styrene (2.0 M) = 10.0 mL/min, T-500-500 mixer, 30 degree-C)

Figure S-23. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 4.0 mL/min, flow rate of Styrene (2.0 M) = 8.0 mL/min, T-500-500 mixer, 30 degree-C)

Figure S-24. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 3.0 mL/min, flow rate of Styrene (2.0 M) = 6.0 mL/min, T-500-500 mixer, 30 degree-C)

Figure S-25. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 2.0 mL/min, flow rate of Styrene (2.0 M) = 4.0 mL/min, T-500-500 mixer, 30 degree-C)

Figure S-26. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 0.5 mL/min, flow rate of Styrene (2.0 M) = 1.0 mL/min, T-500-500 mixer, 30 degree-C)

Figure S-27. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 7.5 mL/min, flow rate of Styrene (2.0 M) = 15.0 mL/min, Y-250-250 mixer, 30 degree-C)

Figure S-28. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 5.0 mL/min, flow rate of Styrene (2.0 M) = 10.0 mL/min, Y-250-250 mixer, 30 degree-C)

Figure S-29. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 4.0 mL/min, flow rate of Styrene (2.0 M) = 8.0 mL/min, Y-250-250 mixer, 30 degree-C)

Figure S-30. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 2.0 mL/min, flow rate of Styrene (2.0 M) = 4.0 mL/min, Y-250-250 mixer, 30 degree-C)

Figure S-31. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 1.0 mL/min, flow rate of Styrene (2.0 M) = 2.0 mL/min, Y-250-250 mixer, 30 degree-C)

Figure S-32. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 0.5 mL/min, flow rate of Styrene (2.0 M) = 1.0 mL/min, Y-250-250 mixer, 30 degree-C)

Figure S-33. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 7.5 mL/min, flow rate of Styrene (2.0 M) = 15.0 mL/min, T-250-500 mixer, 30 degree-C)

Figure S-34. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 5.0 mL/min, flow rate of Styrene (2.0 M) = 10.0 mL/min, T-250-500 mixer, 30 degree-C)

Figure S-35. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 4.0 mL/min, flow rate of Styrene (2.0 M) = 8.0 mL/min, T-250-500 mixer, 30 degree-C)

Figure S-36. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 3.0 mL/min, flow rate of Styrene (2.0 M) = 6.0 mL/min, T-250-500 mixer, 30 degree-C)

Figure S-37. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 2.0 mL/min, flow rate of Styrene (2.0 M) = 4.0 mL/min, T-250-500 mixer, 30 degree-C)

Figure S-38. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 1.0 mL/min, flow rate of Styrene (2.0 M) = 2.0 mL/min, T-250-500 mixer, 30 degree-C)

Figure S-39. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 0.5 mL/min, flow rate of Styrene (2.0 M) = 1.0 mL/min, T-250-500 mixer, 30 degree-C)

Figure S-40. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 7.5 mL/min, flow rate of Styrene (2.0 M) = 15.0 mL/min, T-500-250 mixer, 30 degree-C)

Figure S-41. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 5.0 mL/min, flow rate of Styrene (2.0 M) = 10.0 mL/min, T-500-250 mixer, 30 degree-C)

Figure S-42. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 4.0 mL/min, flow rate of Styrene (2.0 M) = 8.0 mL/min, T-500-250 mixer, 30 degree-C)

Figure S-43. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 3.0 mL/min, flow rate of Styrene (2.0 M) = 6.0 mL/min, T-500-250 mixer, 30 degree-C)

Figure S-44. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 2.0 mL/min, flow rate of Styrene (2.0 M) = 4.0 mL/min, T-500-250 mixer, 30 degree-C)

Figure S-45. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 1.0 mL/min, flow rate of Styrene (2.0 M) = 2.0 mL/min, T-500-250 mixer, 30 degree-C)

Figure S-46. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 0.5 mL/min, flow rate of Styrene (2.0 M) = 1.0 mL/min, T-500-250 mixer, 30 degree-C)

Figure S-47. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 7.5 mL/min, flow rate of Styrene (2.0 M) = 15.0 mL/min, V-500-500 mixer, 30 degree-C)

Figure S-48. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 5.0 mL/min, flow rate of Styrene (2.0 M) = 10.0 mL/min, V-500-500 mixer, 30 degree-C)

Figure S-49. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 4.0 mL/min, flow rate of Styrene (2.0 M) = 8.0 mL/min, V-500-500 mixer, 30 degree-C)

Figure S-50. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 3.0 mL/min, flow rate of Styrene (2.0 M) = 6.0 mL/min, V-500-500 mixer, 30 degree-C)

Figure S-51. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 2.0 mL/min, flow rate of Styrene (2.0 M) = 4.0 mL/min, V-500-500 mixer, 30 degree-C)

Figure S-52. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 1.0 mL/min, flow rate of Styrene (2.0 M) = 2.0 mL/min, V-500-500 mixer, 30 degree-C)

Figure S-53. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 7.5 mL/min, flow rate of Styrene (2.0 M) = 15.0 mL/min, T-250-250 mixer, 30 degree-C, 2nd trial)

Figure S-54. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 5.0 mL/min, flow rate of Styrene (2.0 M) = 10.0 mL/min, T-250-250 mixer, 30 degree-C, 2nd trial)

Figure S-55. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 4.0 mL/min, flow rate of Styrene (2.0 M) = 8.0 mL/min, T-250-250 mixer, 30 degree-C, 2nd trial)

Figure S-56. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 3.0 mL/min, flow rate of Styrene (2.0 M) = 6.0 mL/min, T-250-250 mixer, 30 degree-C, 2nd trial)

Figure S-57. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 2.0 mL/min, flow rate of Styrene (2.0 M) = 4.0 mL/min, T-250-250 mixer, 30 degree-C, 2nd trial)

The reproducibility of anionic polymerization

Figure S-58. Comparing the Mw/Mn of 1st and 2nd trials

Table S-1. Numeric data of 2nd trial in the above graph

Explaining the results of Dushman reaction

Figure S-59. Comparing V-shape and T- shape mixers in Dushman reaction

Figure S-60. Comparing Y-shape and T- shape mixers in Dushman reaction

Table S-2. Numeric data of each graph in Dushman reaction

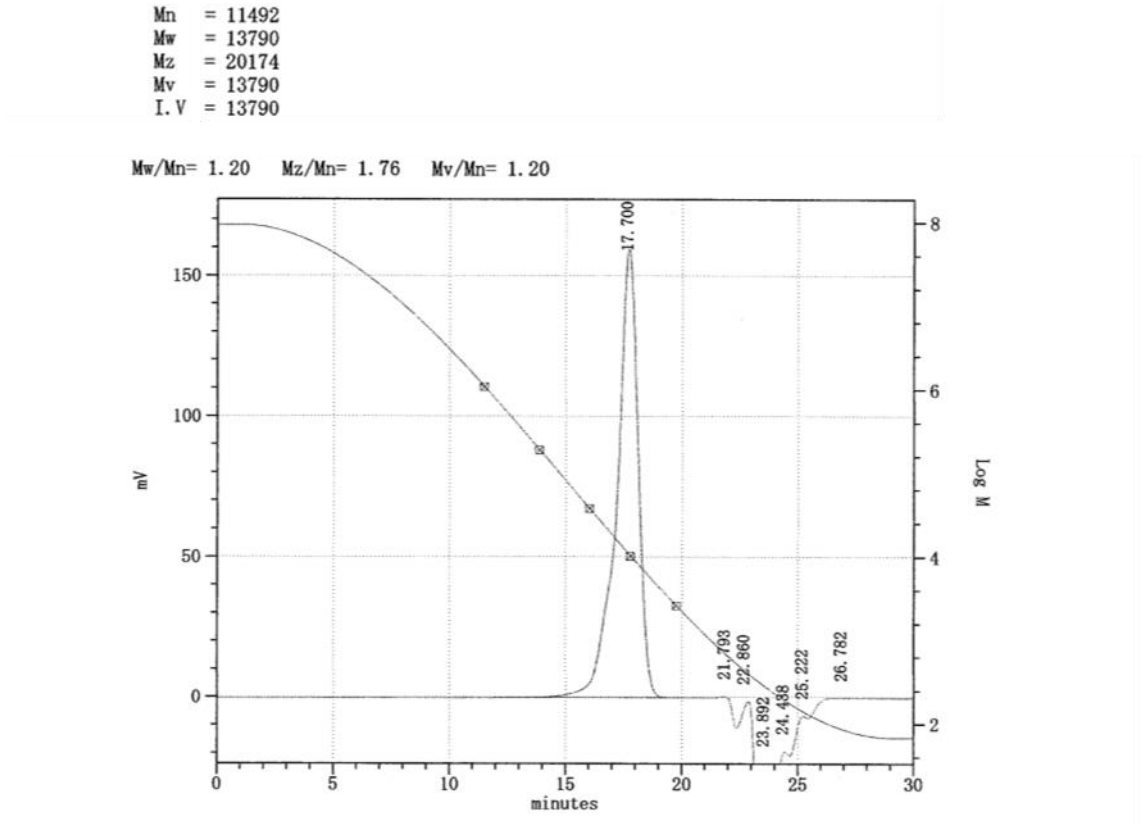

Figure S-1. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 7.5 mL/min, flow rate of Styrene (2.0 M) = 15.0 mL/min, T-250-250 mixer, 30 degree-C)

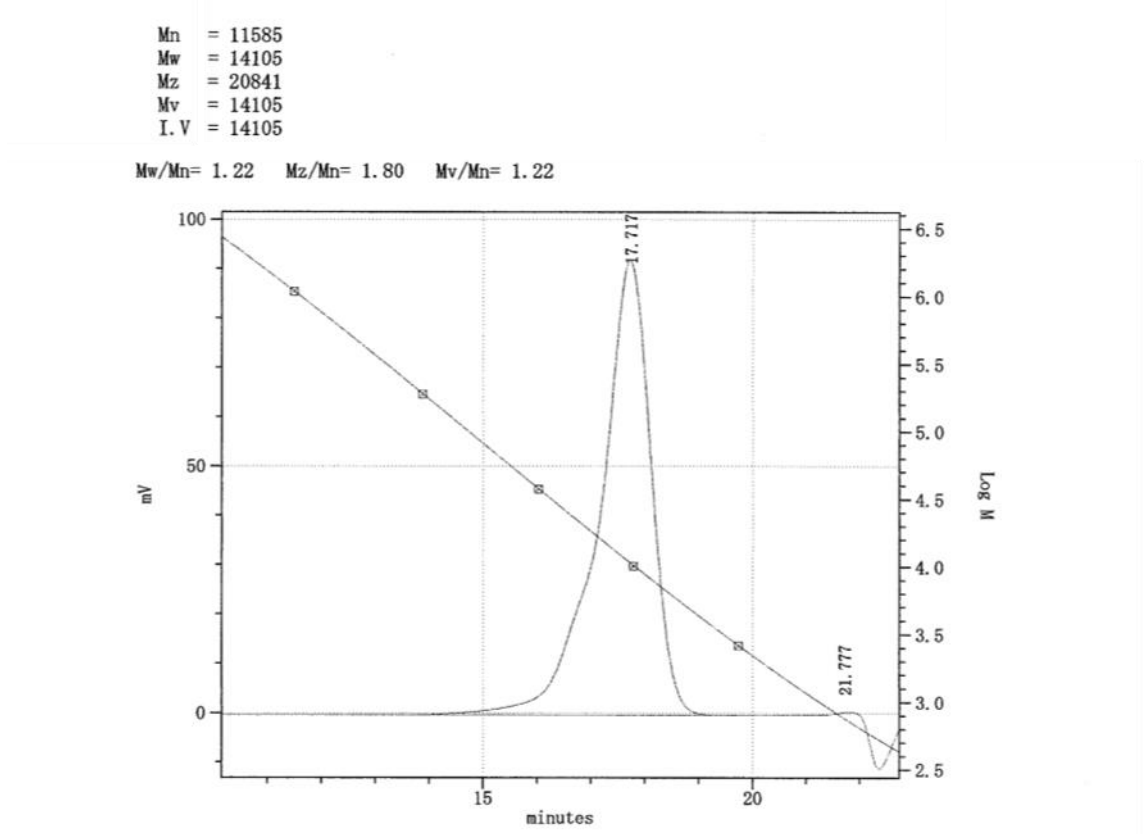

Figure S-2. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 5.0 mL/min, flow rate of Styrene (2.0 M) = 10.0 mL/min, T-250-250 mixer, 30 degree-C)

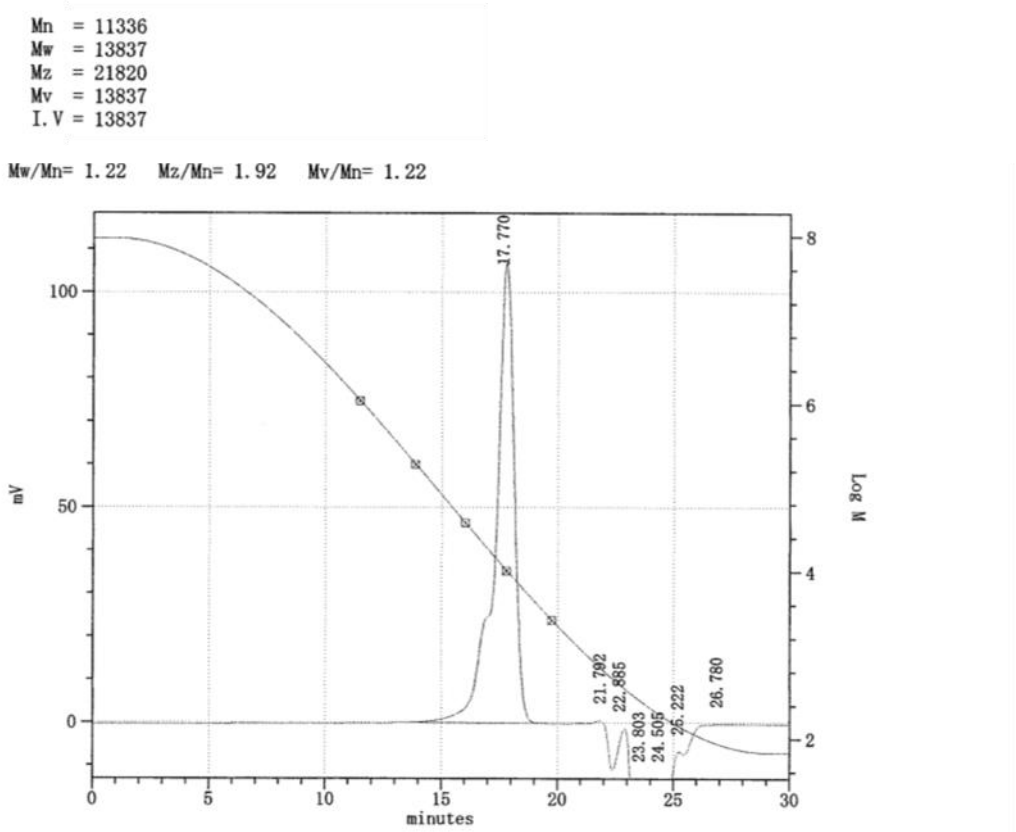

Figure S-3. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 4.0 mL/min, flow rate of Styrene (2.0 M) = 8.0 mL/min, T-250-250 mixer, 30 degree-C)

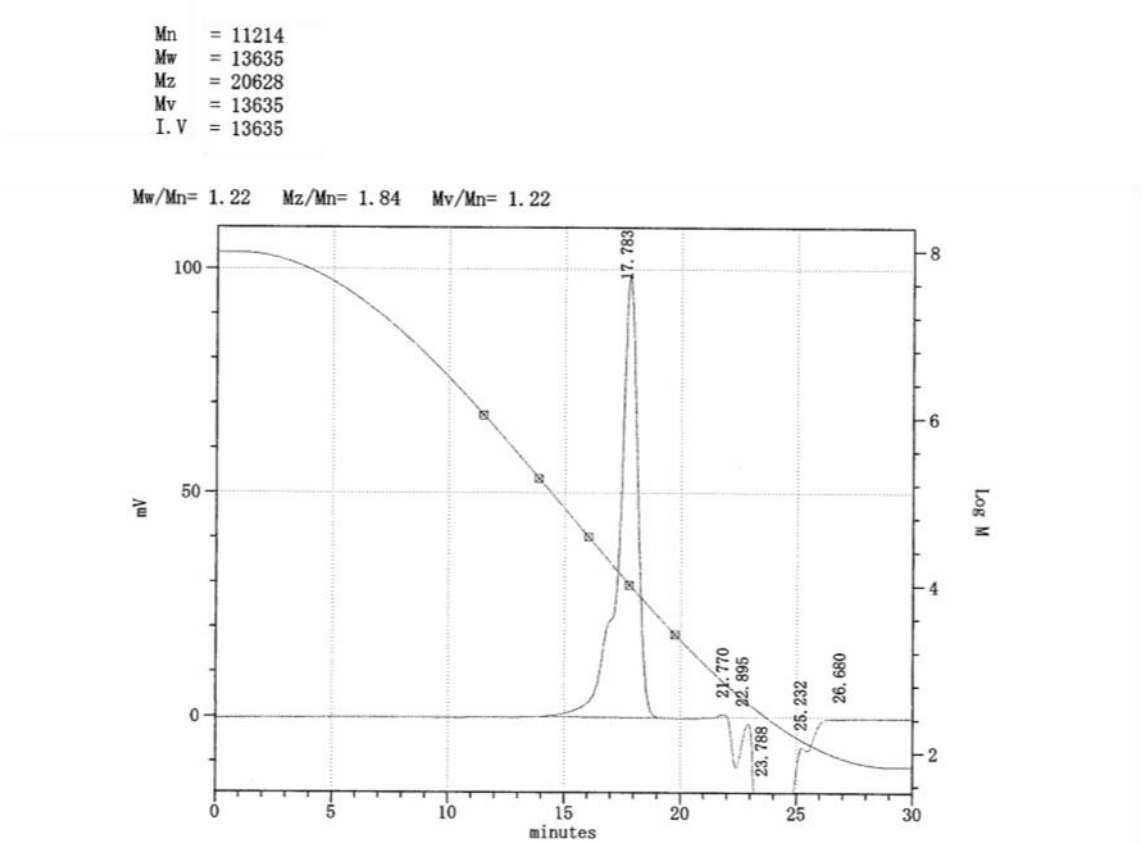

Figure S-4. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 3.0 mL/min, flow rate of Styrene (2.0 M) = 6.0 mL/min, T-250-250 mixer, 30 degree-C)

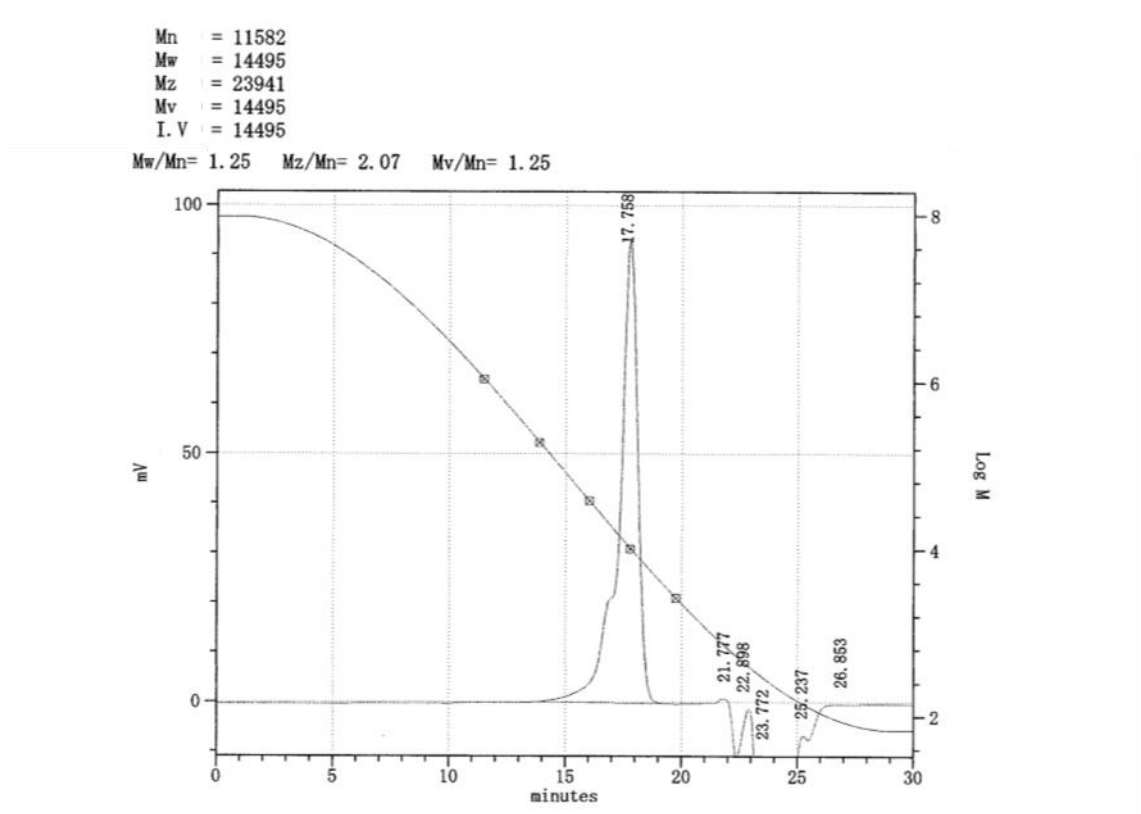

Figure S-5. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 2.0 mL/min, flow rate of Styrene (2.0 M) = 4.0 mL/min, T-250-250 mixer, 30 degree-C)

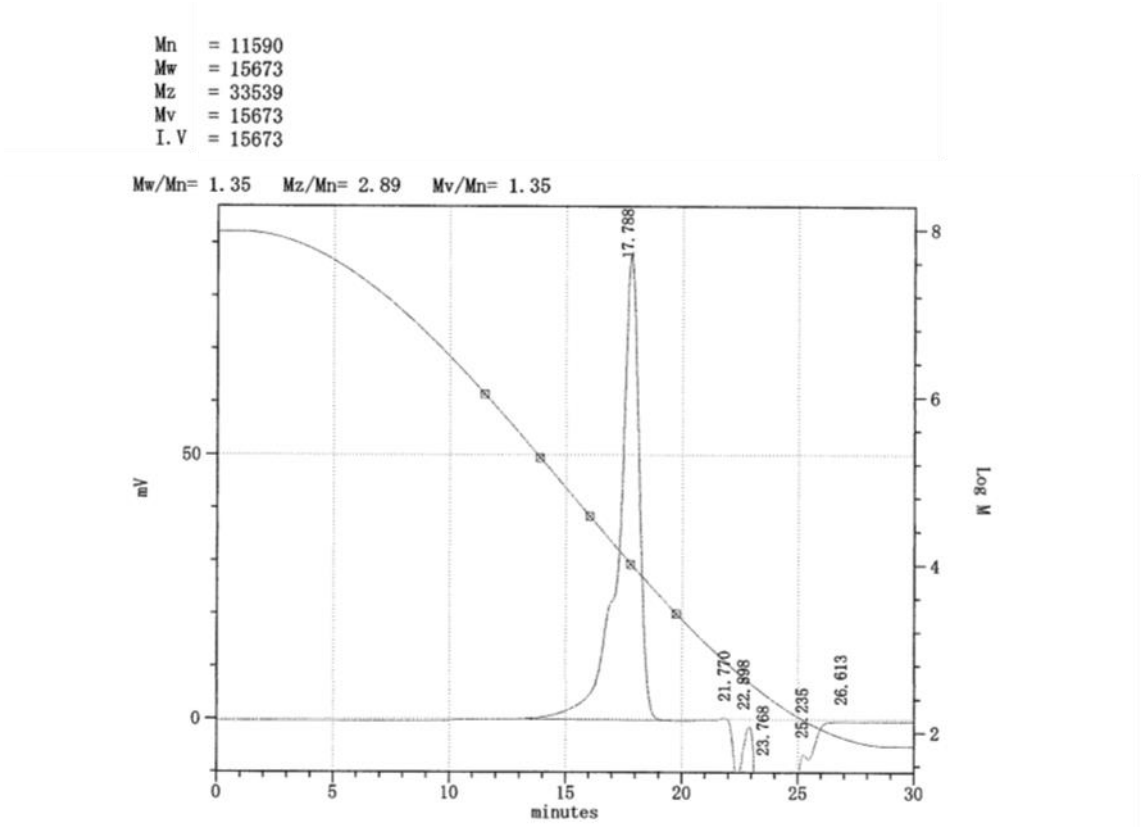

Figure S-6. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 1.0 mL/min, flow rate of Styrene (2.0 M) = 2.0 mL/min, T-250-250 mixer, 30 degree-C)

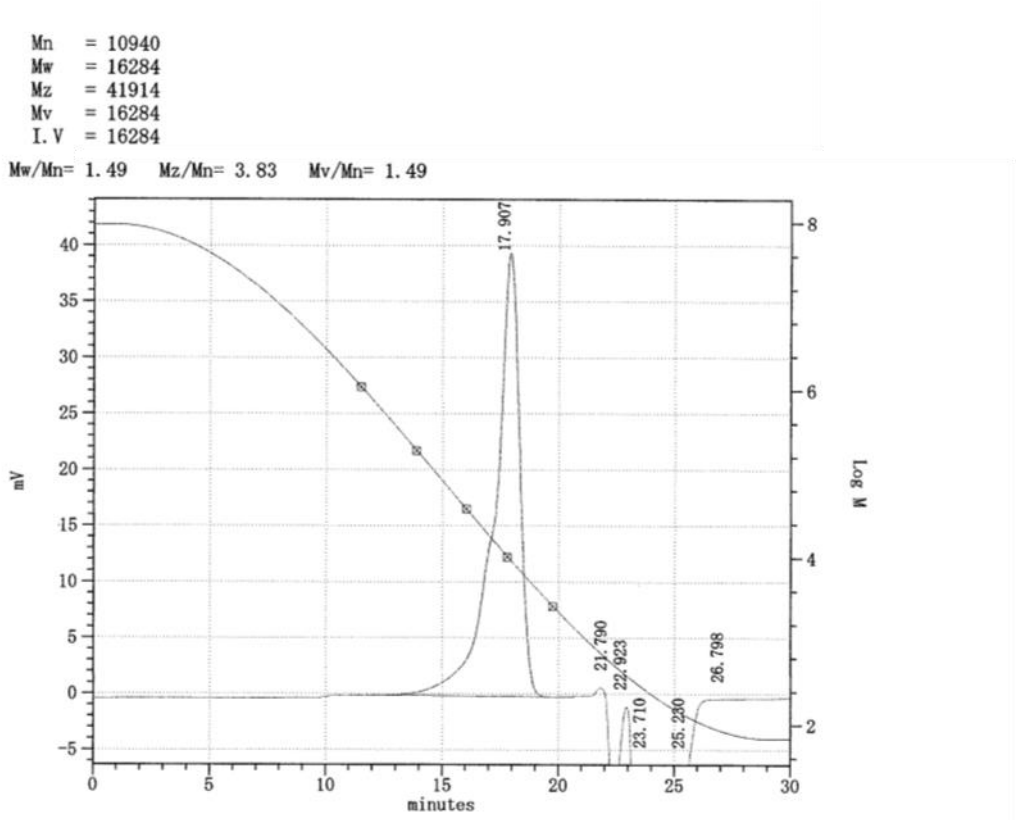

Figure S-7. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 0.5 mL/min, flow rate of Styrene (2.0 M) = 1.0 mL/min, T-250-250 mixer, 30 degree-C)

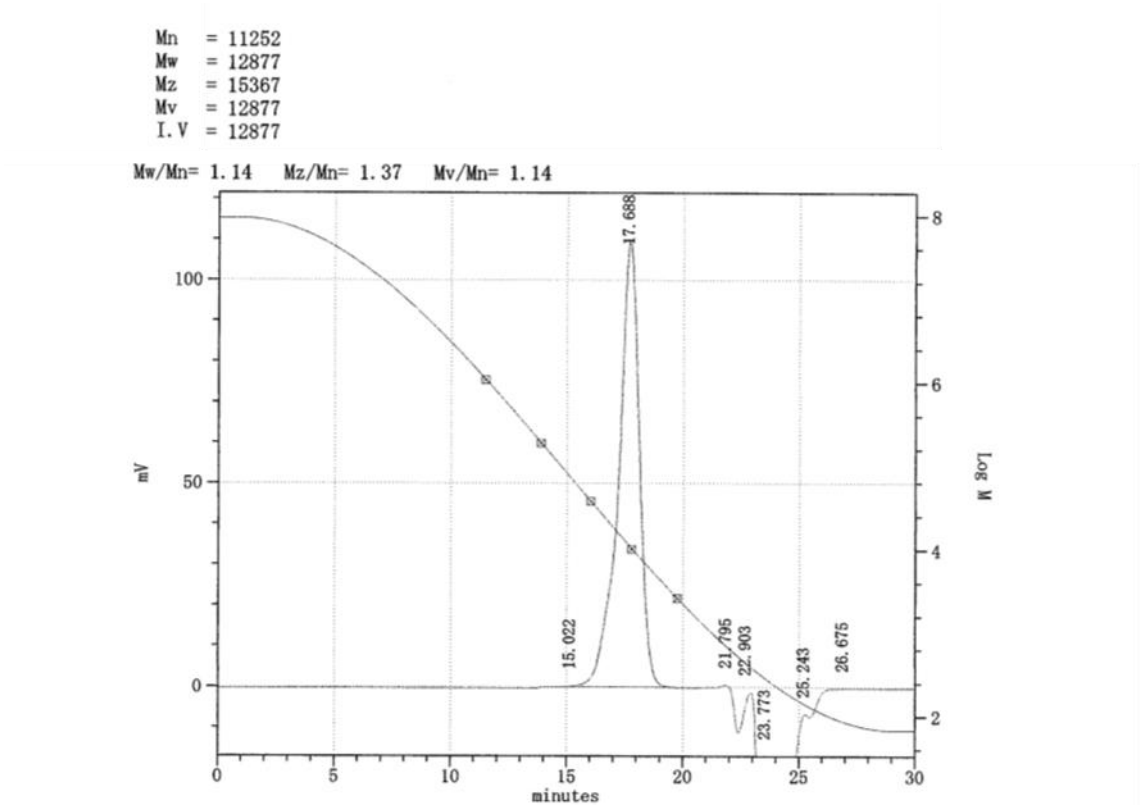

Figure S-8. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 7.5 mL/min, flow rate of Styrene (2.0 M) = 15.0 mL/min, T-250-250 mixer, 0 degree-C)

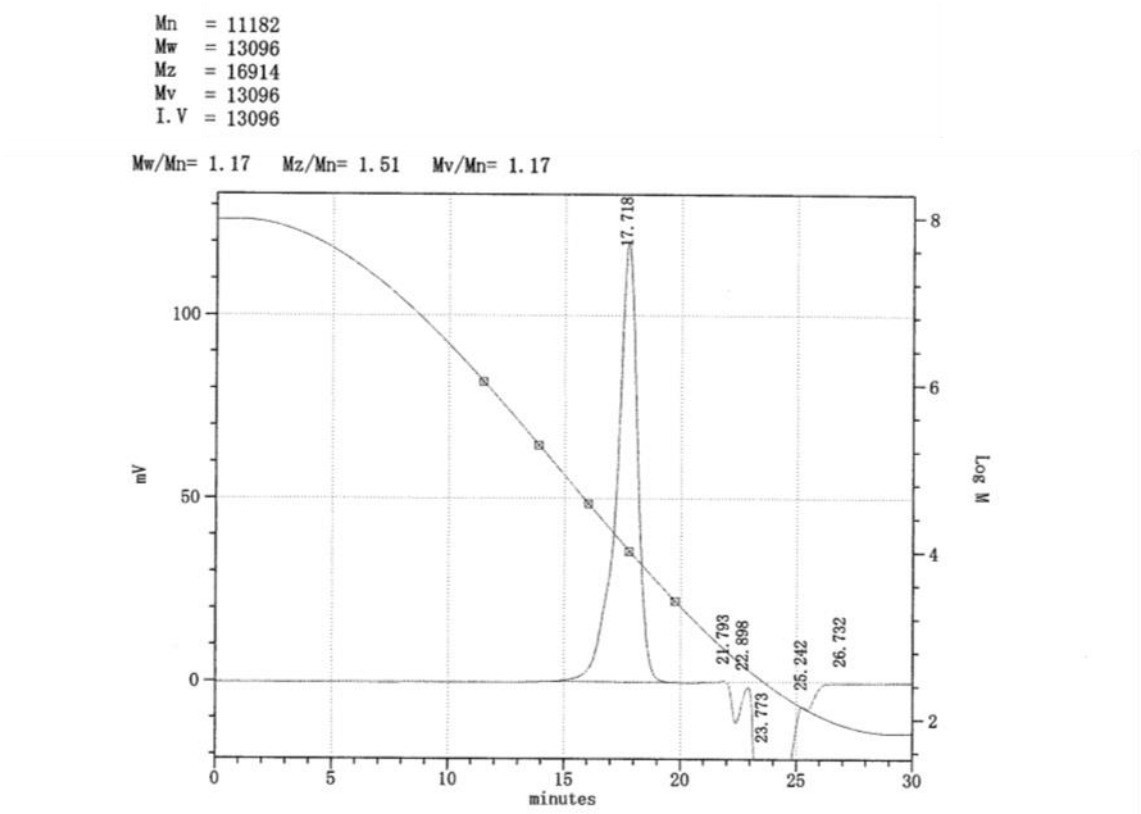

Figure S-9. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 5.0 mL/min, flow rate of Styrene (2.0 M) = 10.0 mL/min, T-250-250 mixer, 0 degree-C)

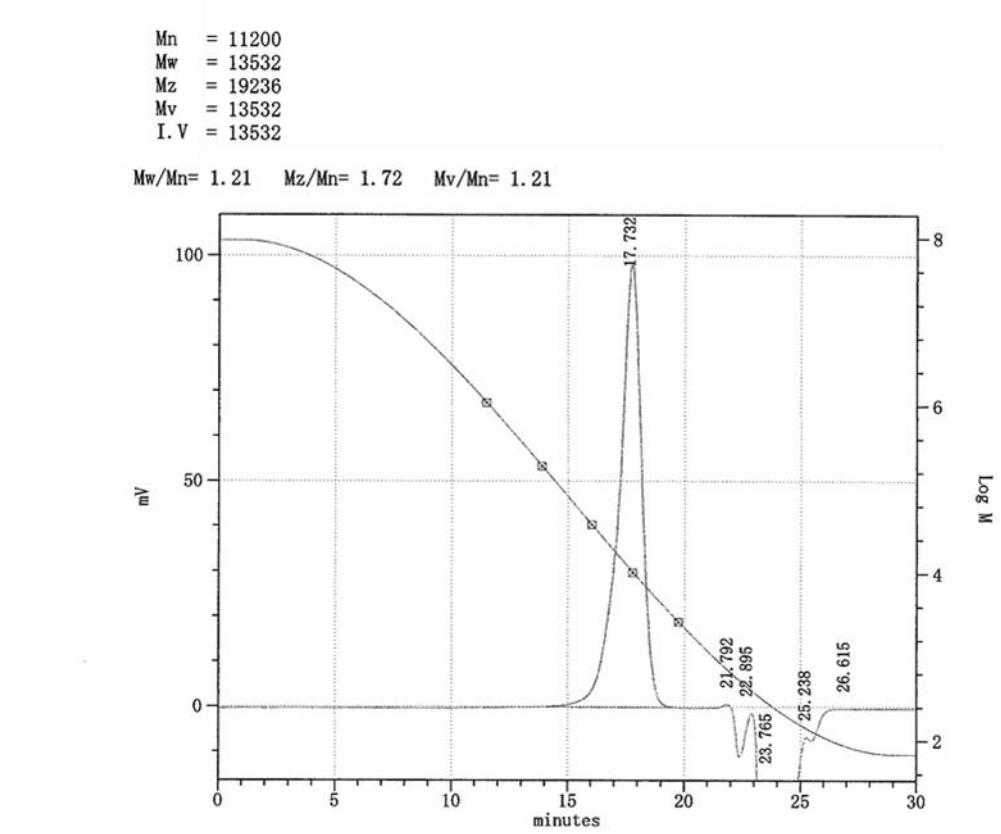

Figure S-10. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 4.0 mL/min, flow rate of Styrene (2.0 M) = 8.0 mL/min, T-250-250 mixer, 0 degree-C)

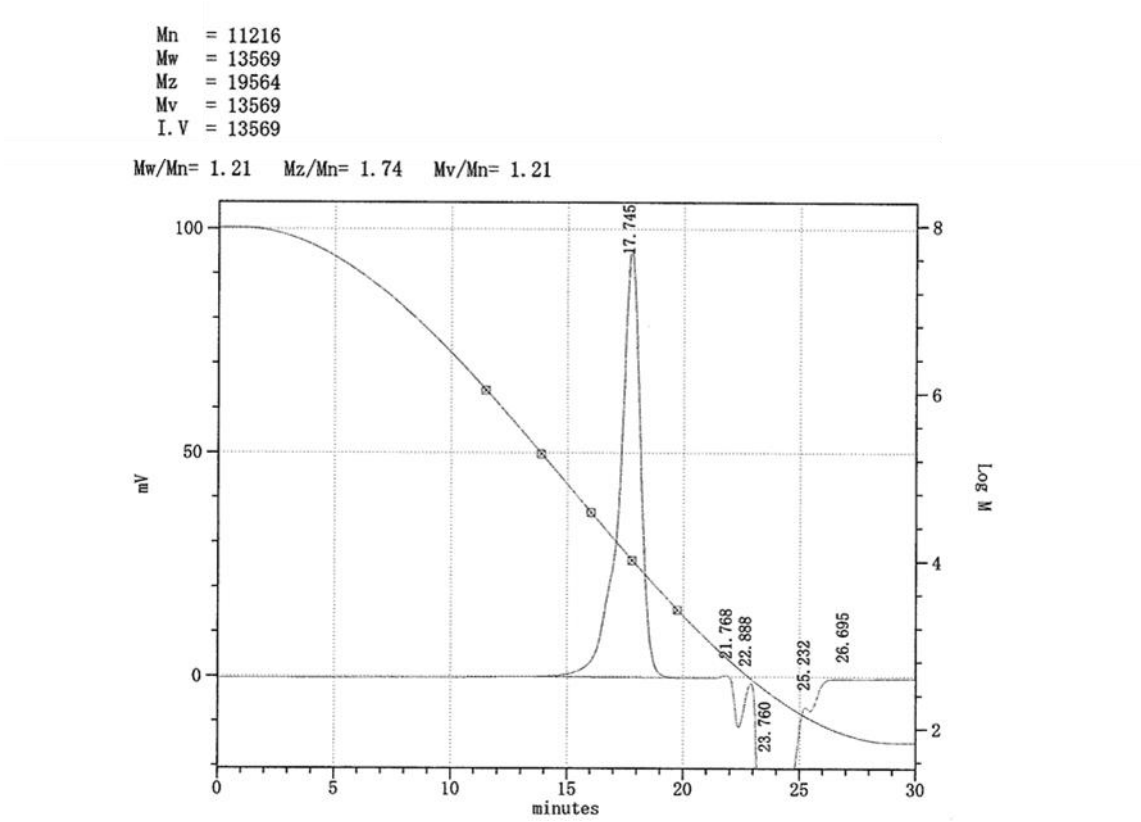

Figure S-11. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 3.0 mL/min, flow rate of Styrene (2.0 M) = 6.0 mL/min, T-250-250 mixer, 0 degree-C)

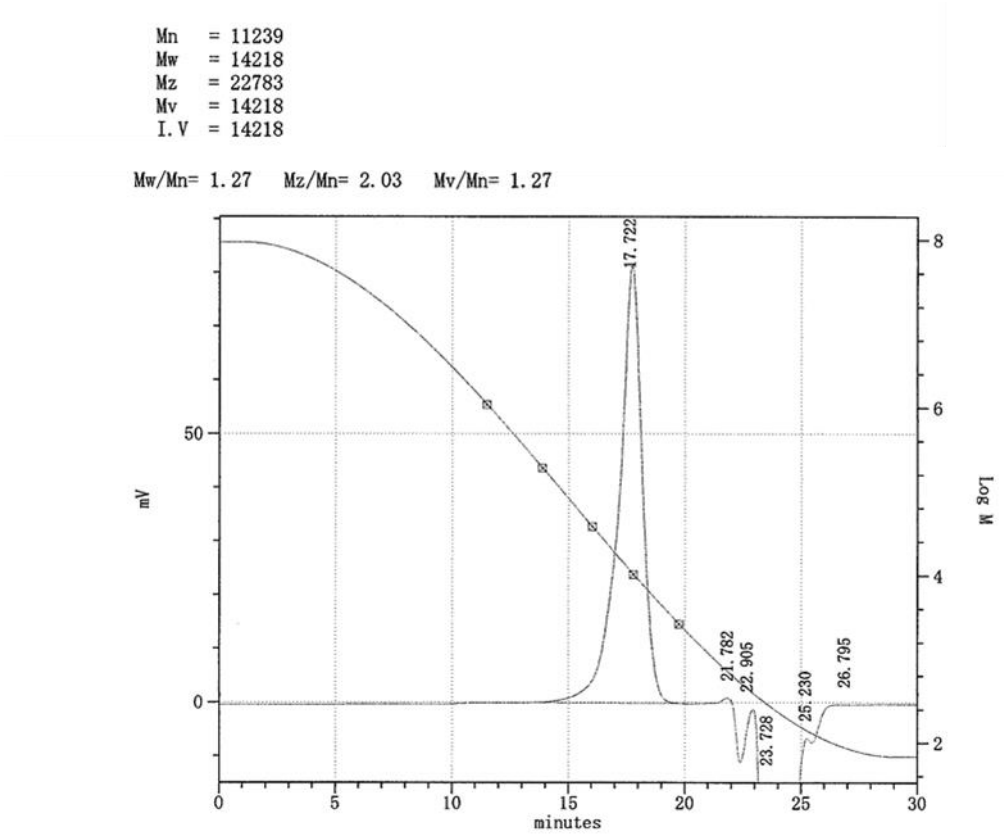

Figure S-12. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 2.0 mL/min, flow rate of Styrene (2.0 M) = 4.0 mL/min, T-250-250 mixer, 0 degree-C)

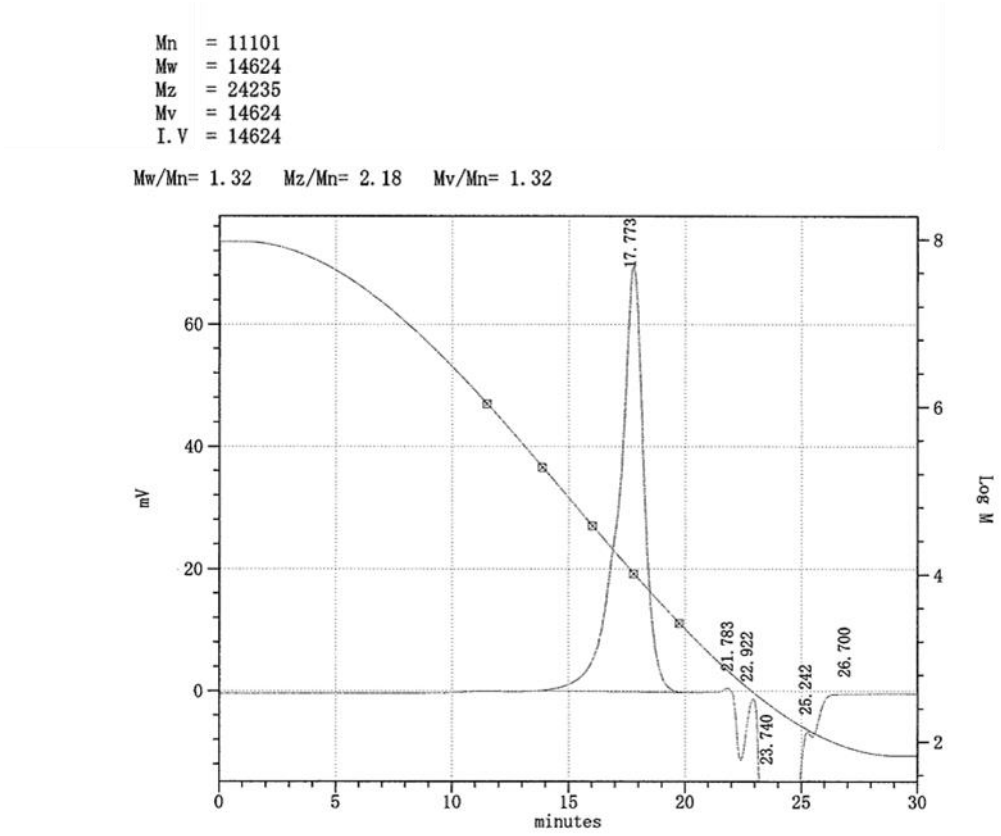

Figure S-13. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 1.0 mL/min, flow rate of Styrene (2.0 M) = 2.0 mL/min, T-250-250 mixer, 0 degree-C)

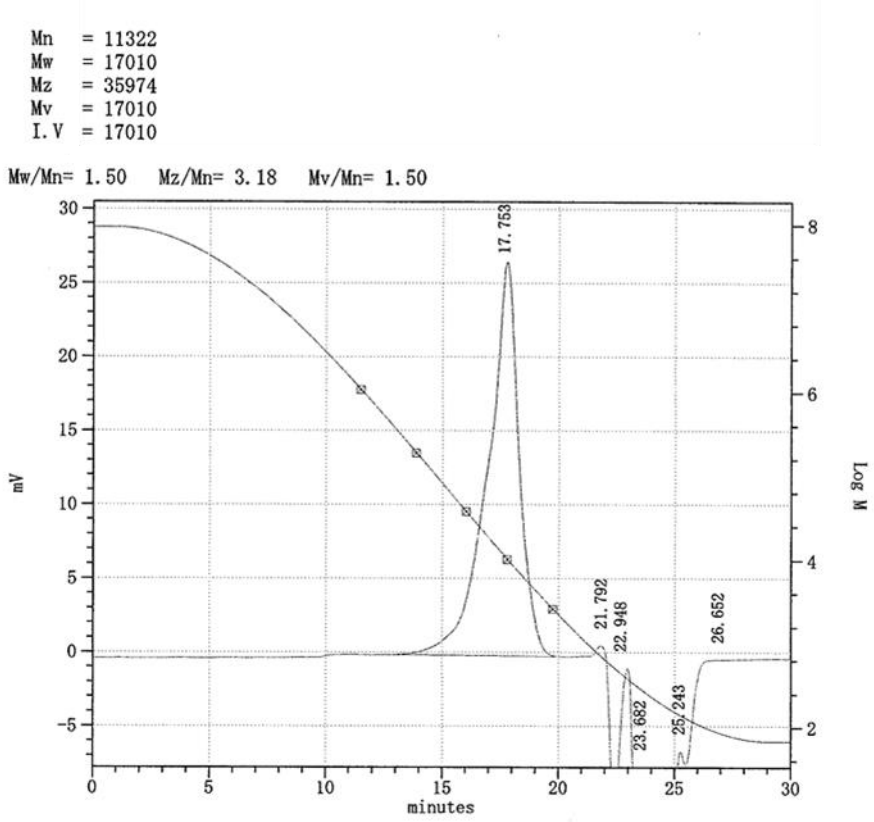

Figure S-14. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 0.5 mL/min, flow rate of Styrene (2.0 M) = 1.0 mL/min, T-250-250 mixer, 0 degree-C)

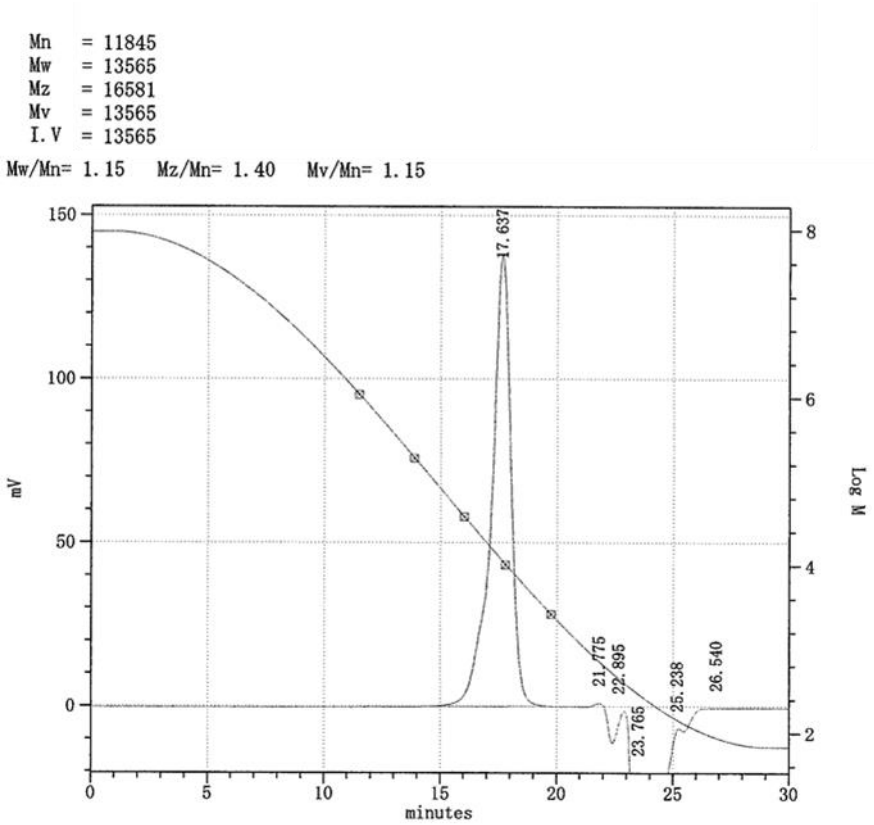

Figure S-15. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 7.5 mL/min, flow rate of Styrene (2.0 M) = 15.0 mL/min, T-250-250 mixer, -20 degree-C)

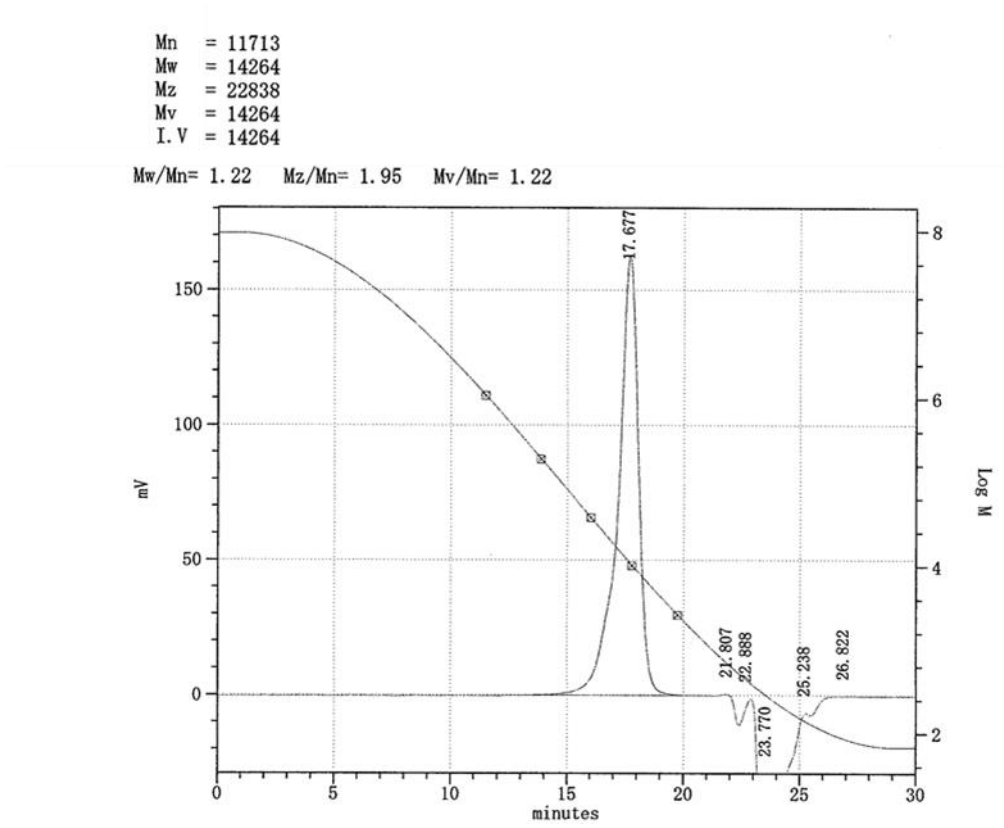

Figure S-16. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 5.0 mL/min, flow rate of Styrene (2.0 M) = 10.0 mL/min, T-250-250 mixer, -20 degree-C)

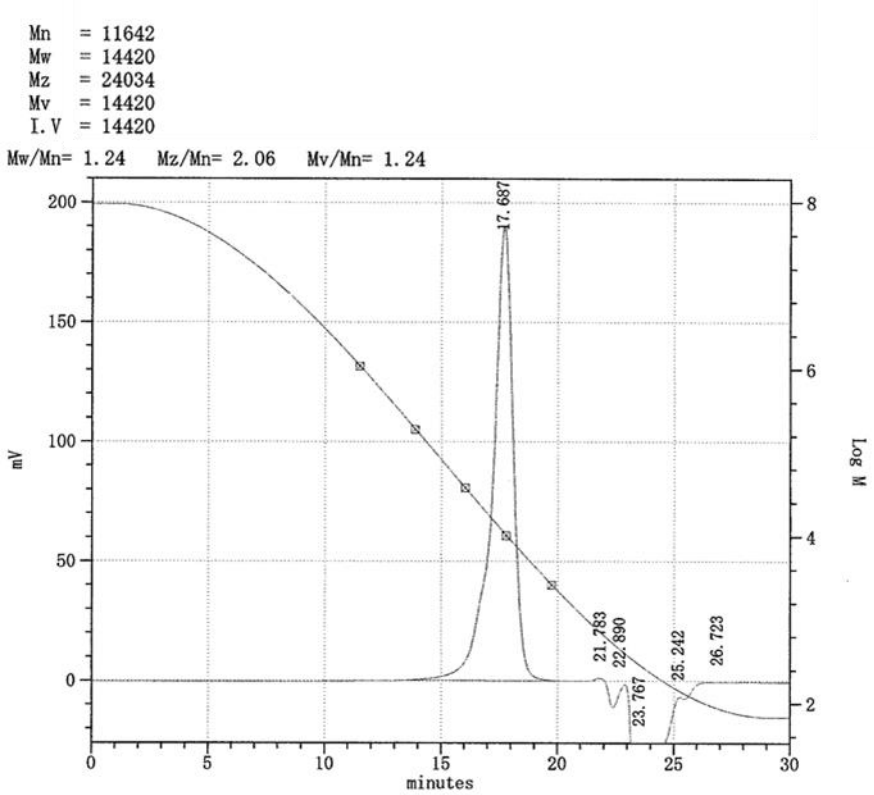

Figure S-17. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 4.0 mL/min, flow rate of Styrene (2.0 M) = 8.0 mL/min, T-250-250 mixer, -20 degree-C)

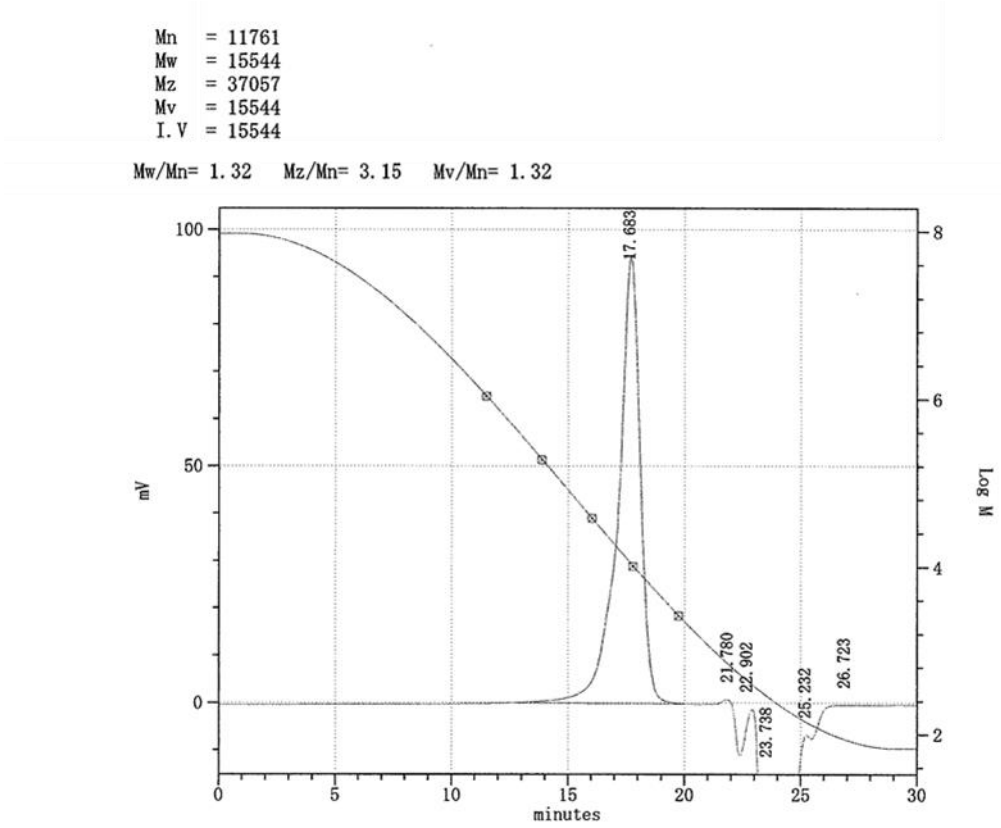

Figure S-18. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 3.0 mL/min, flow rate of Styrene (2.0 M) = 6.0 mL/min, T-250-250 mixer, -20 degree-C)

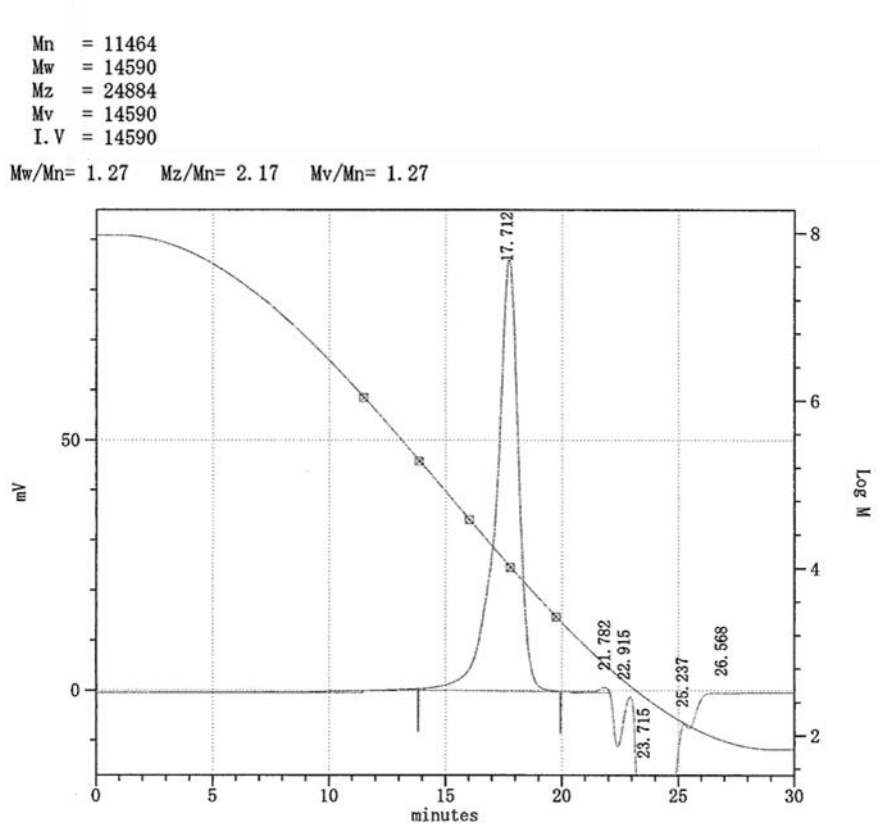

Figure S-19. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 2.0 mL/min, flow rate of Styrene (2.0 M) = 4.0 mL/min, T-250-250 mixer, -20 degree-C)

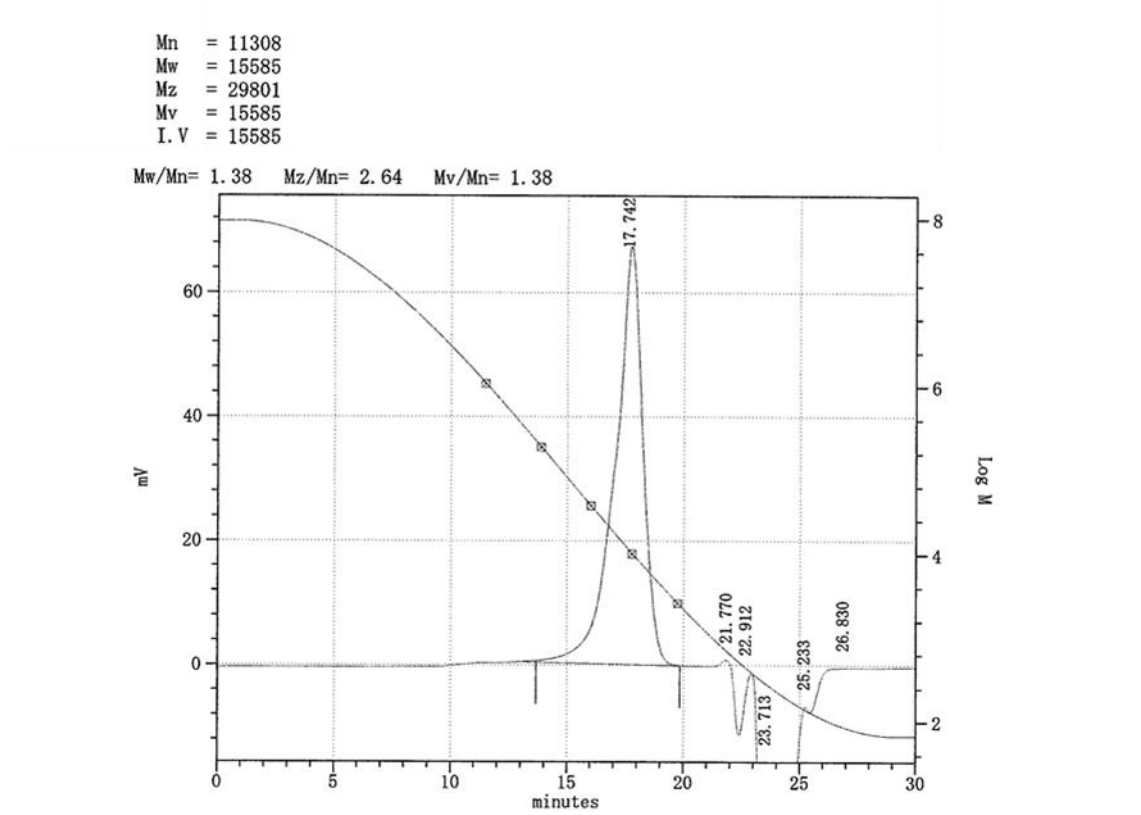

Figure S-20. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 1.0 mL/min, flow rate of Styrene (2.0 M) = 2.0 mL/min, T-250-250 mixer, -20 degree-C)

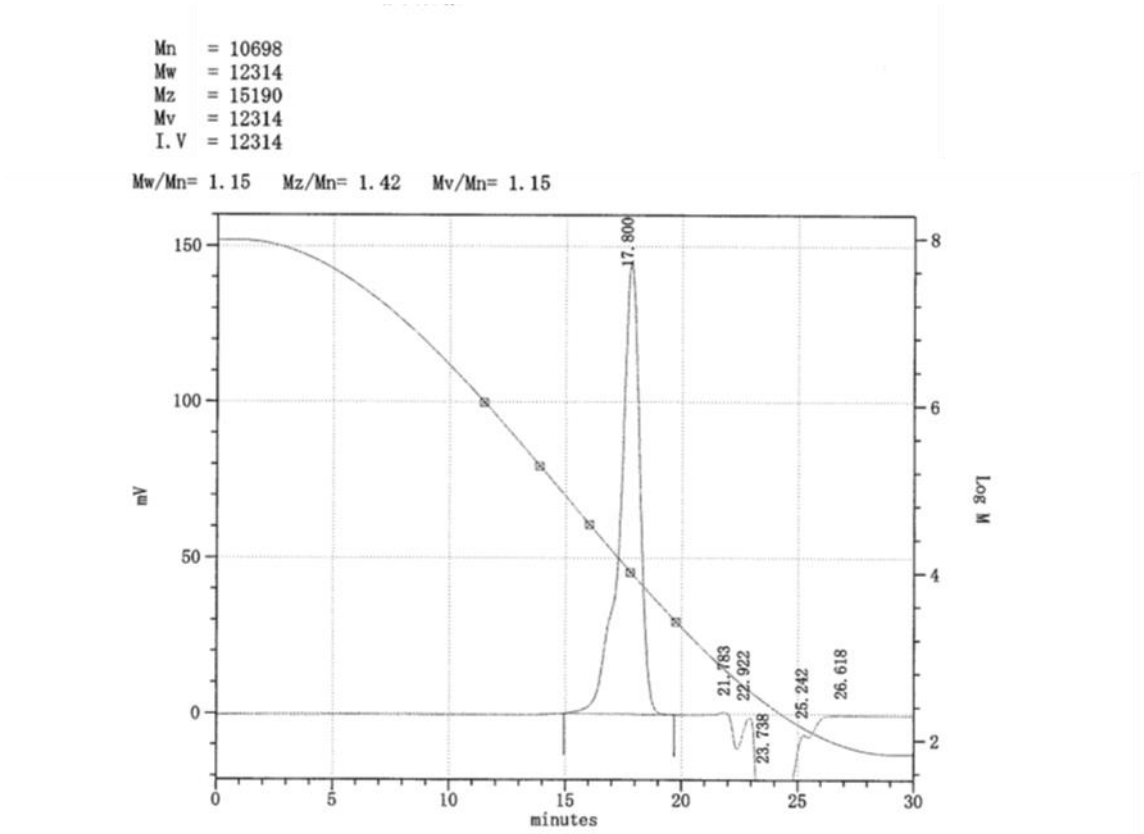

Figure S-21. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 7.5 mL/min, flow rate of Styrene (2.0 M) = 15.0 mL/min, T-500-500 mixer, 30 degree-C)

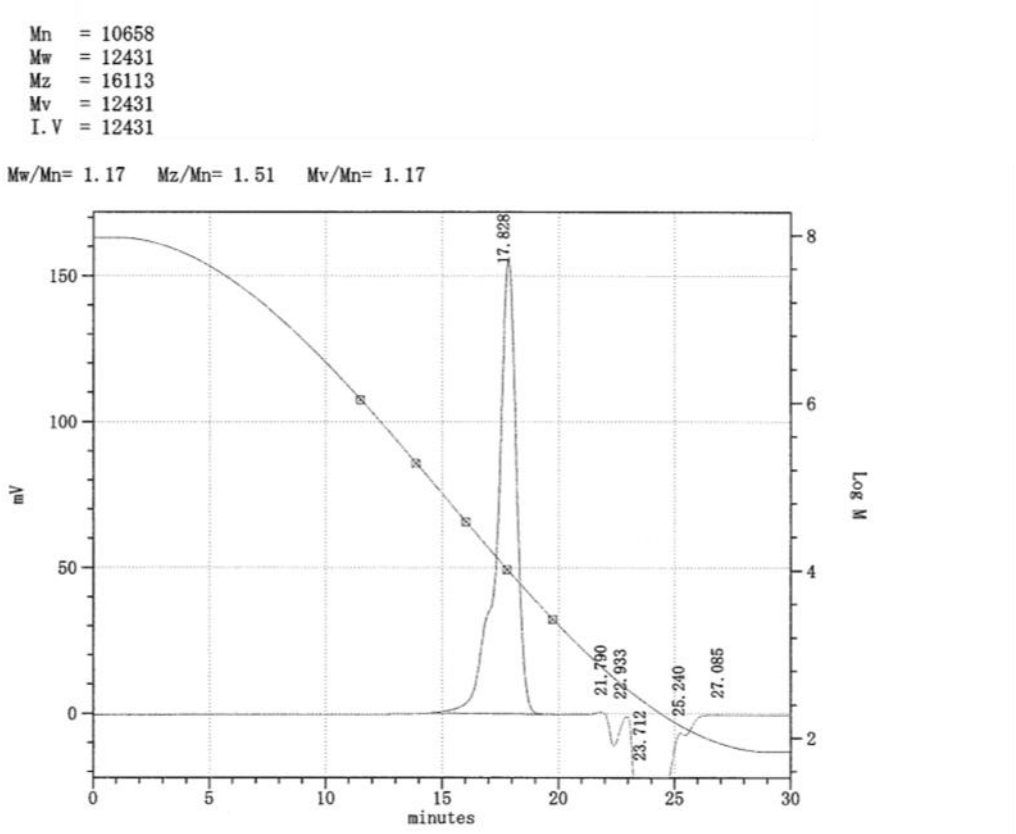

Figure S-22. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 5.0 mL/min, flow rate of Styrene (2.0 M) = 10.0 mL/min, T-500-500 mixer, 30 degree-C)

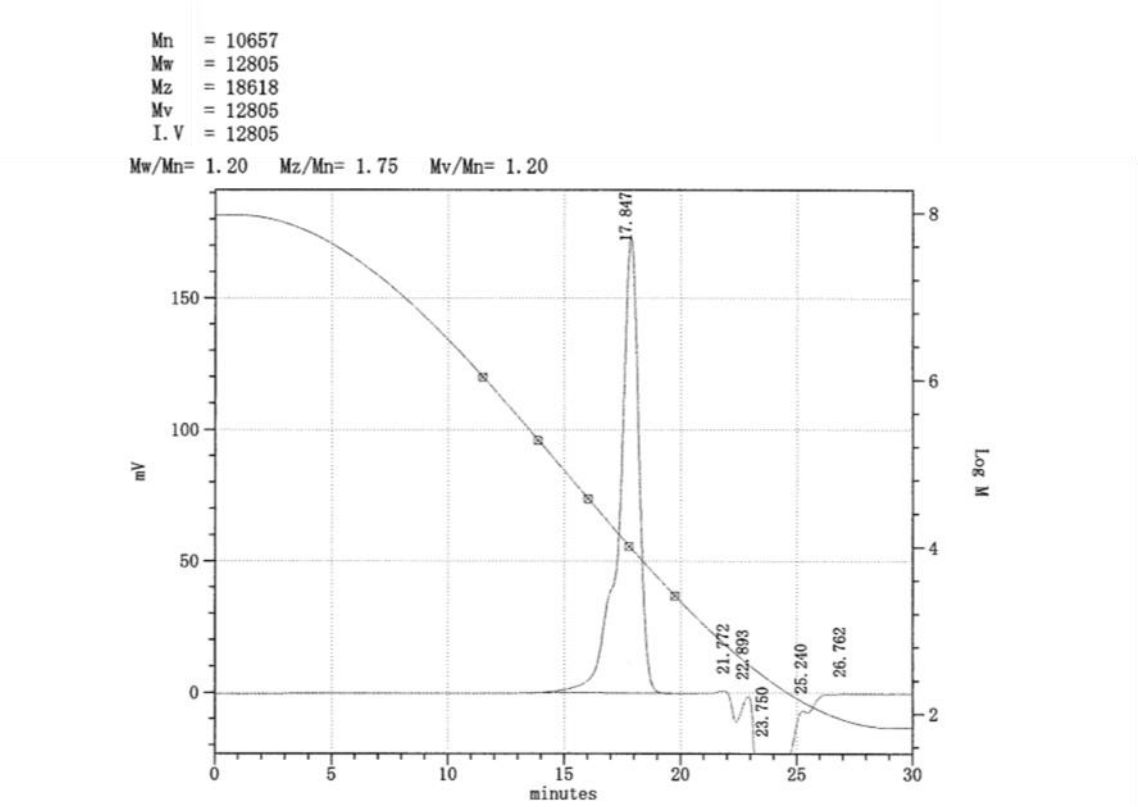

Figure S-23. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 4.0 mL/min, flow rate of Styrene (2.0 M) = 8.0 mL/min, T-500-500 mixer, 30 degree-C)

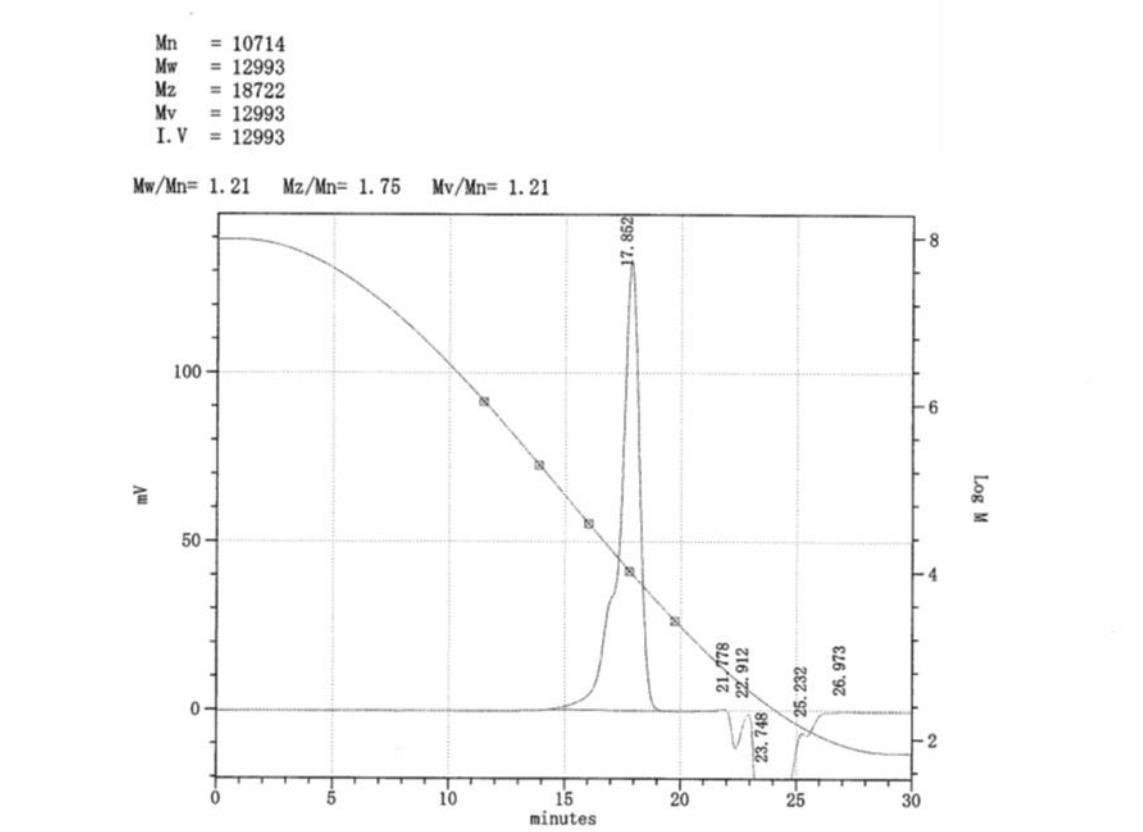

Figure S-24. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 3.0 mL/min, flow rate of Styrene (2.0 M) = 6.0 mL/min, T-500-500 mixer, 30 degree-C)

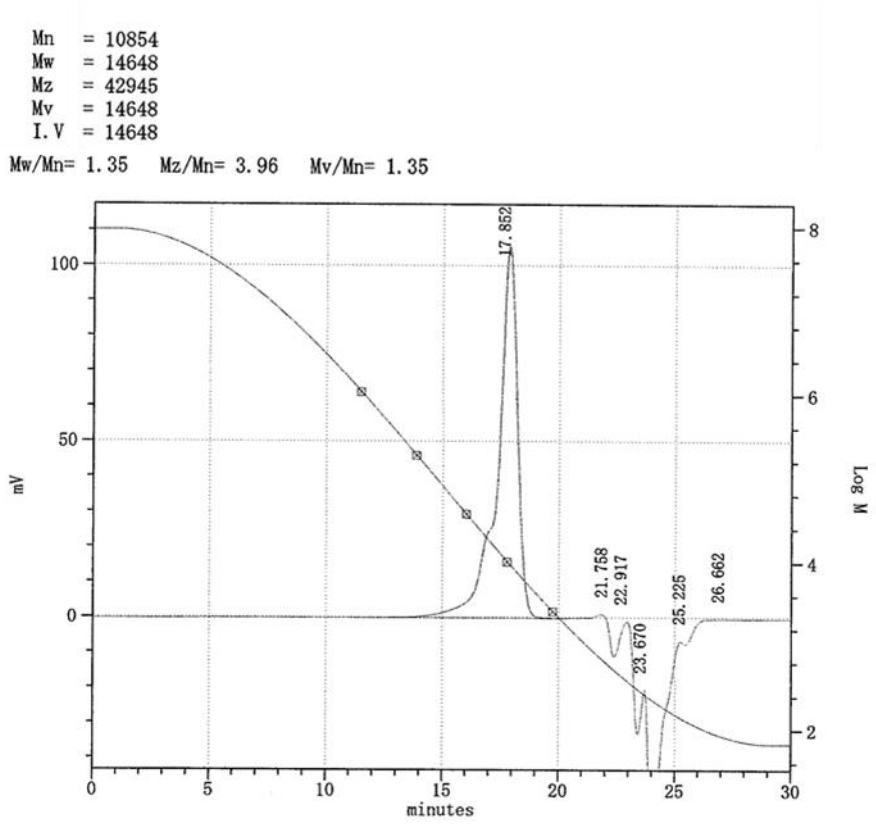

Figure S-25. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 2.0 mL/min, flow rate of Styrene (2.0 M) = 4.0 mL/min, T-500-500 mixer, 30 degree-C)

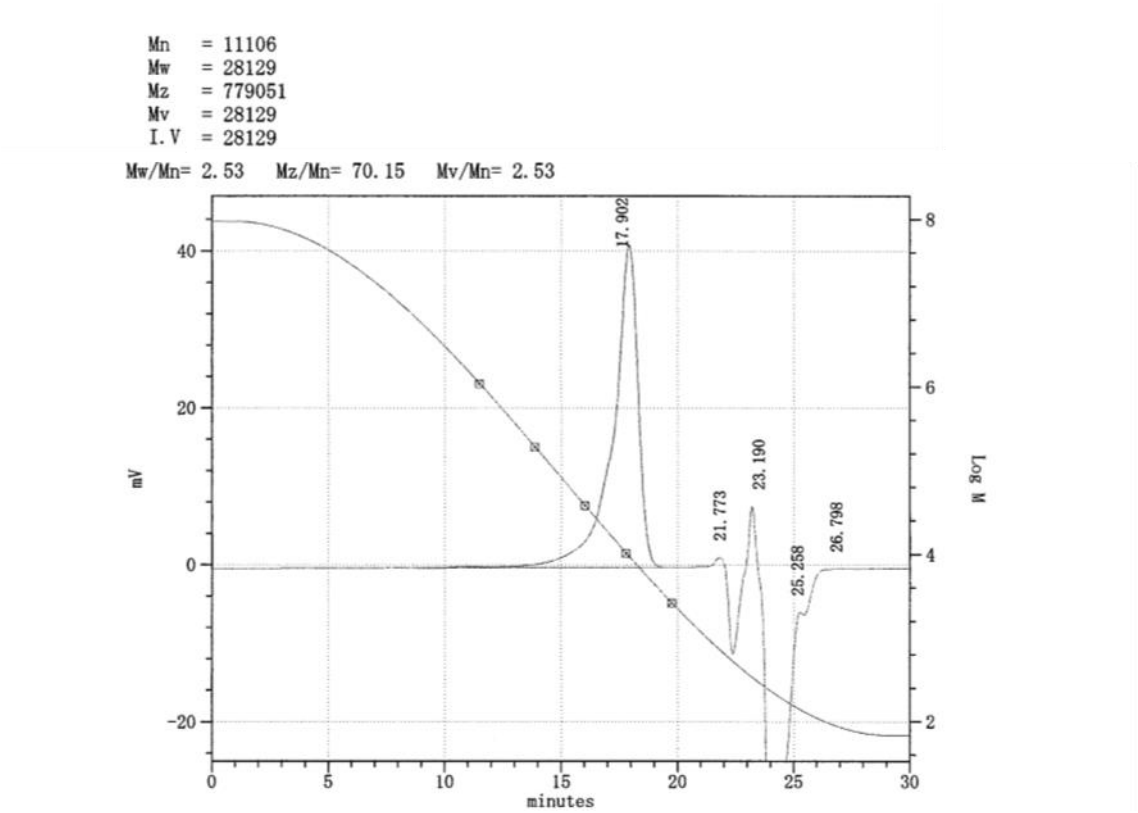

Figure S-26. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 0.5 mL/min, flow rate of Styrene (2.0 M) = 1.0 mL/min, T-500-500 mixer, 30 degree-C)

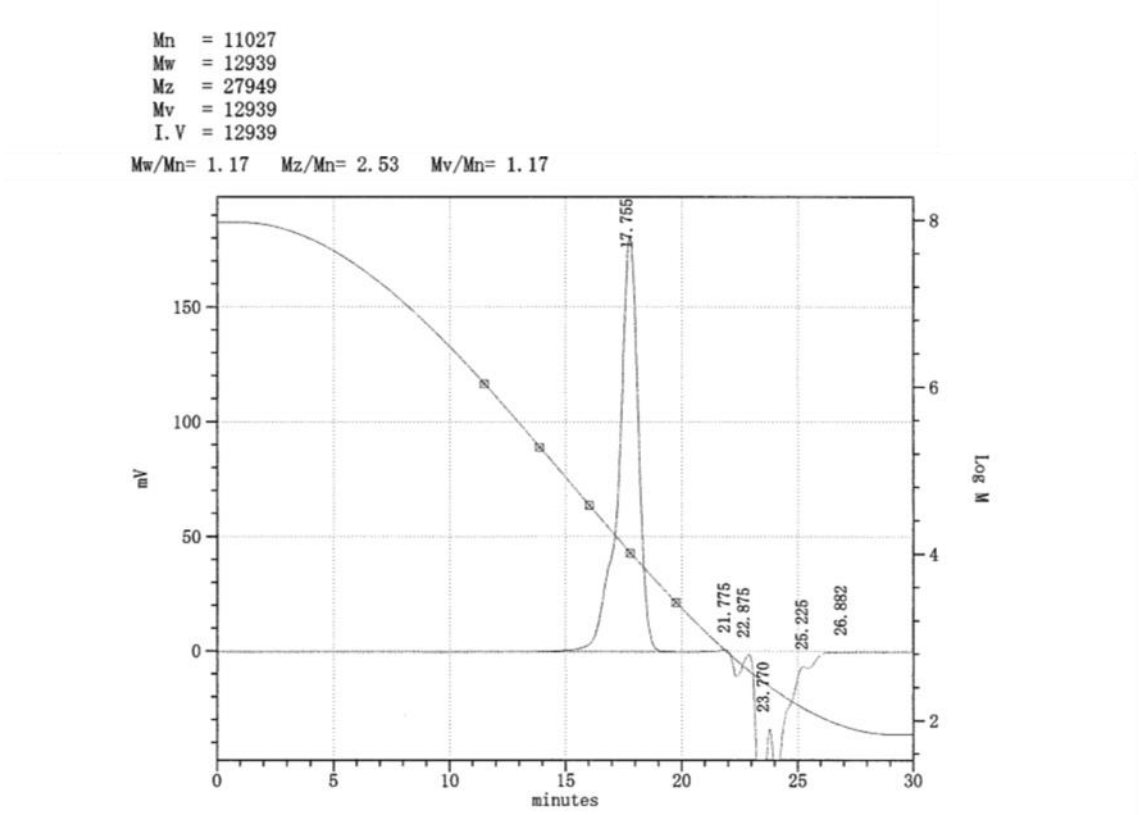

Figure S-27. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 7.5 mL/min, flow rate of Styrene (2.0 M) = 15.0 mL/min, Y-250-250 mixer, 30 degree-C)

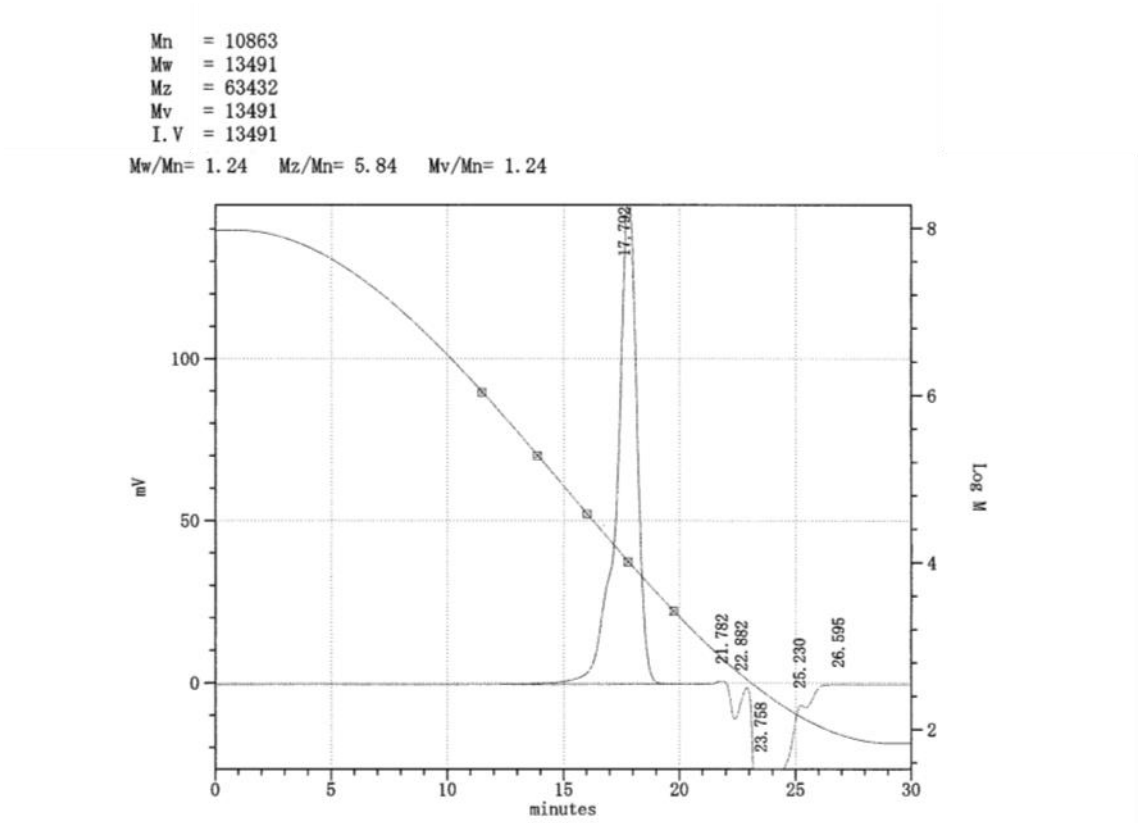

Figure S-28. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 5.0 mL/min, flow rate of Styrene (2.0 M) = 10.0 mL/min, Y-250-250 mixer, 30 degree-C)

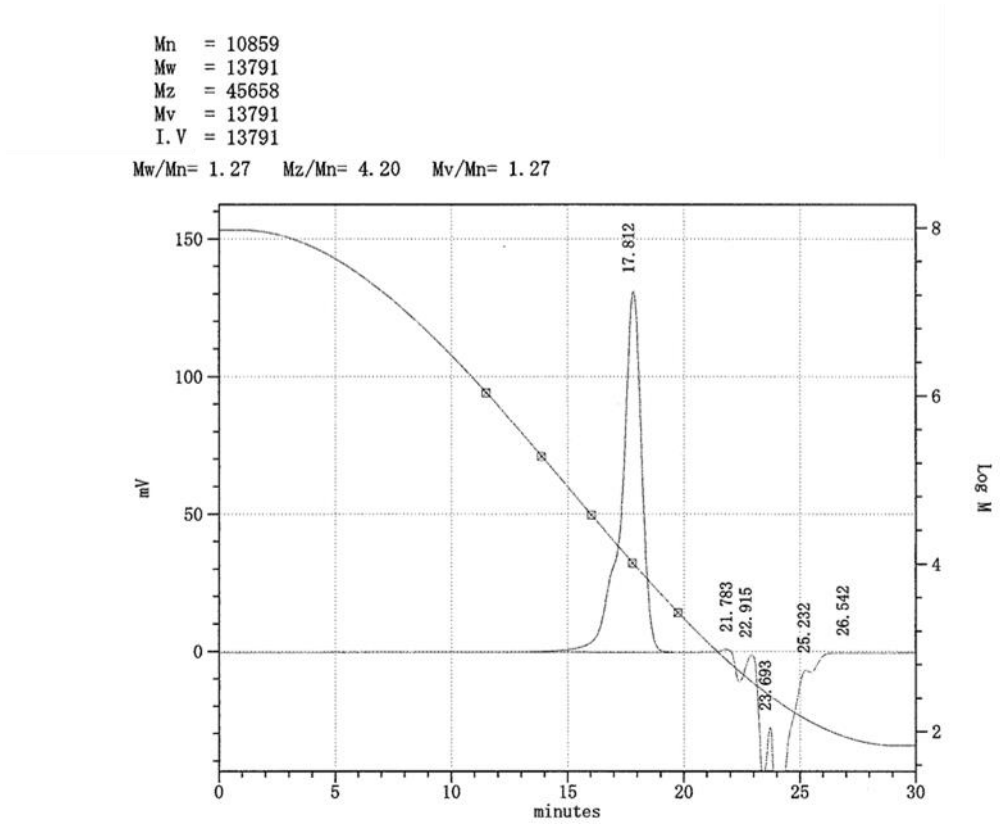

Figure S-29. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 4.0 mL/min, flow rate of Styrene (2.0 M) = 8.0 mL/min, Y-250-250 mixer, 30 degree-C)

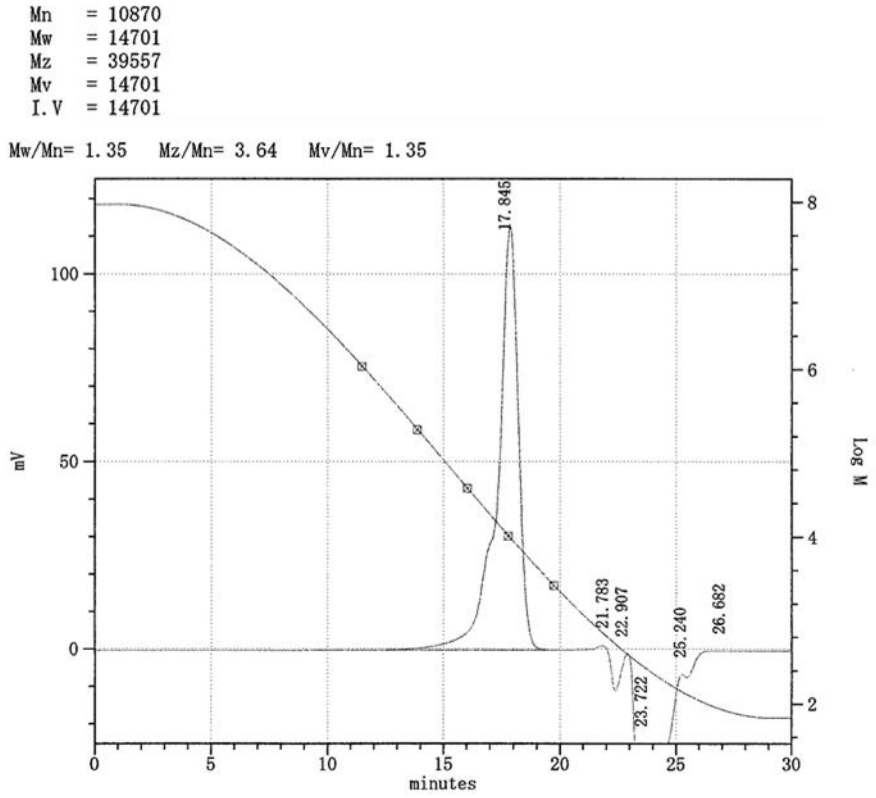

Figure S-30. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 2.0 mL/min, flow rate of Styrene (2.0 M) = 4.0 mL/min, Y-250-250 mixer, 30 degree-C)

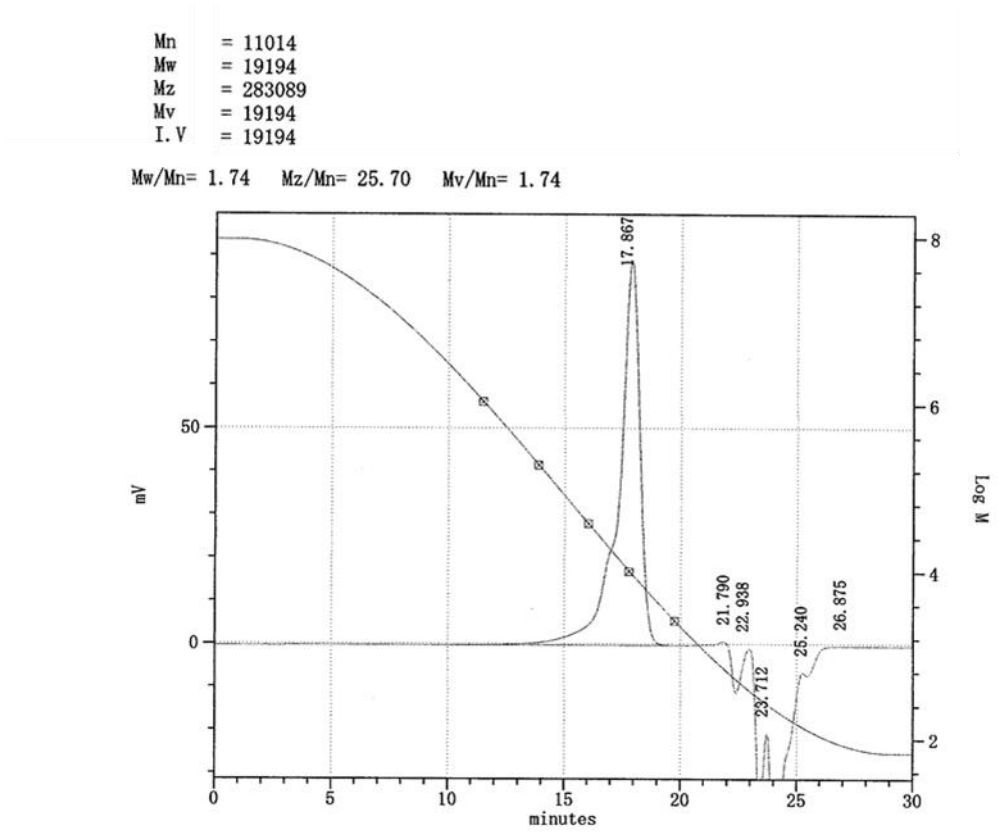

Figure S-31. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 1.0 mL/min, flow rate of Styrene (2.0 M) = 2.0 mL/min, Y-250-250 mixer, 30 degree-C)

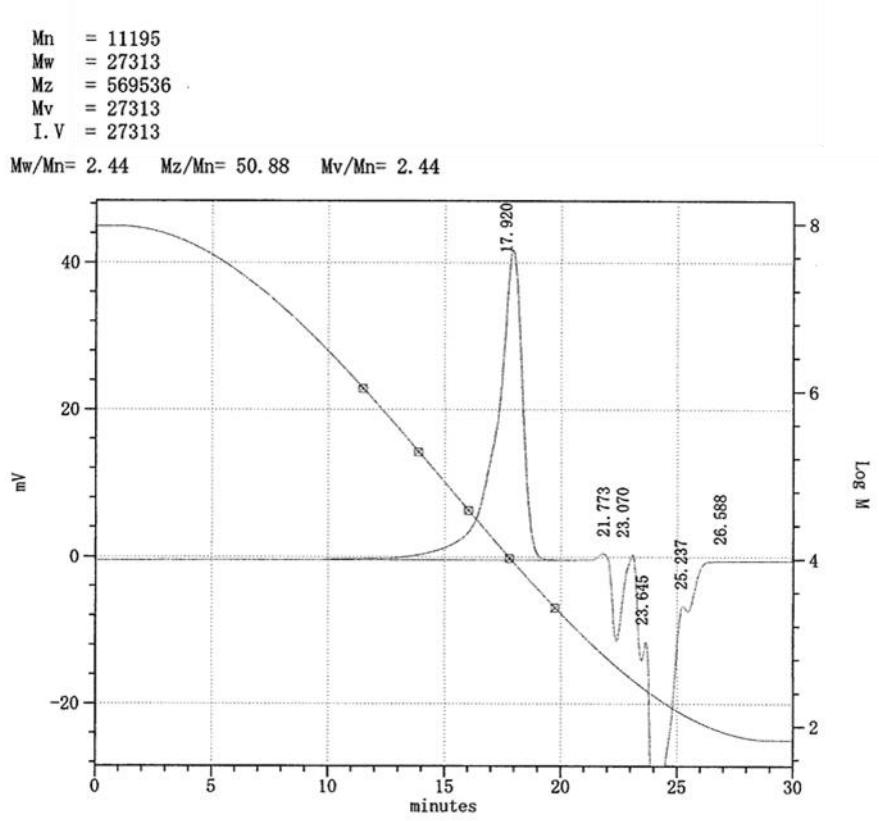

Figure S-32. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 0.5 mL/min, flow rate of Styrene (2.0 M) = 1.0 mL/min, Y-250-250 mixer, 30 degree-C)

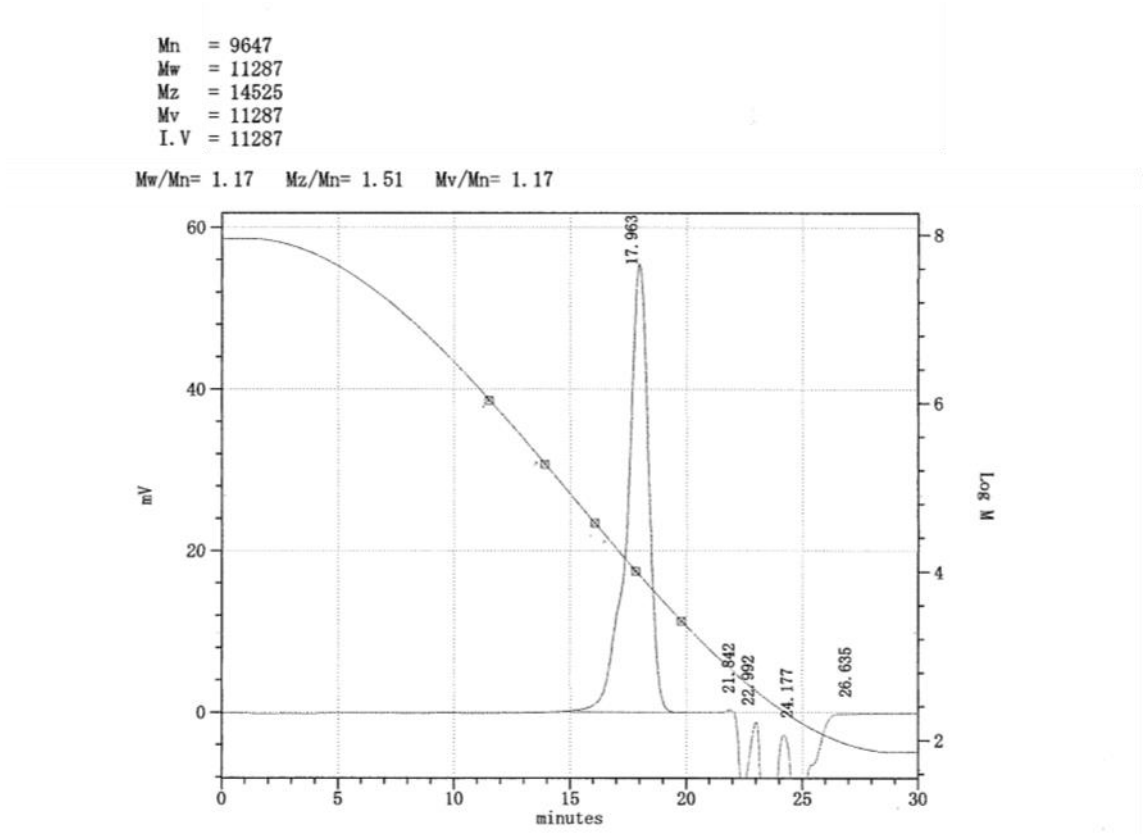

Figure S-33. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 7.5 mL/min, flow rate of Styrene (2.0 M) = 15.0 mL/min, T-250-500 mixer, 30 degree-C)

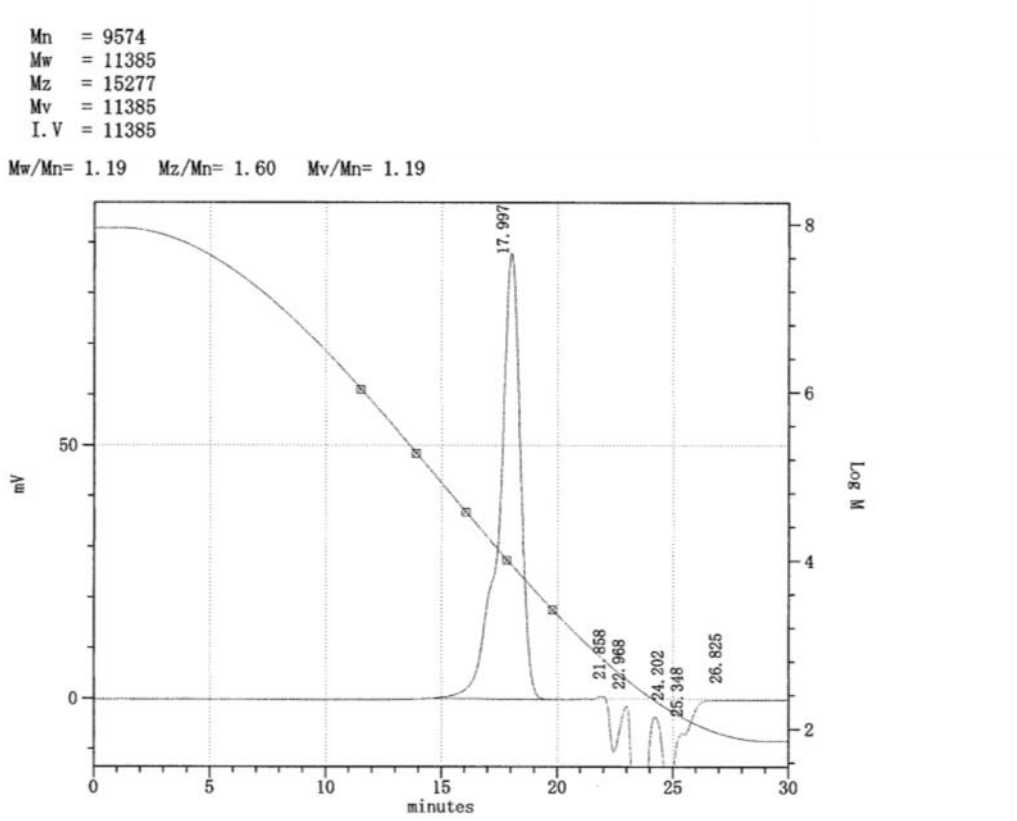

Figure S-34. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 5.0 mL/min, flow rate of Styrene (2.0 M) = 10.0 mL/min, T-250-500 mixer, 30 degree-C)

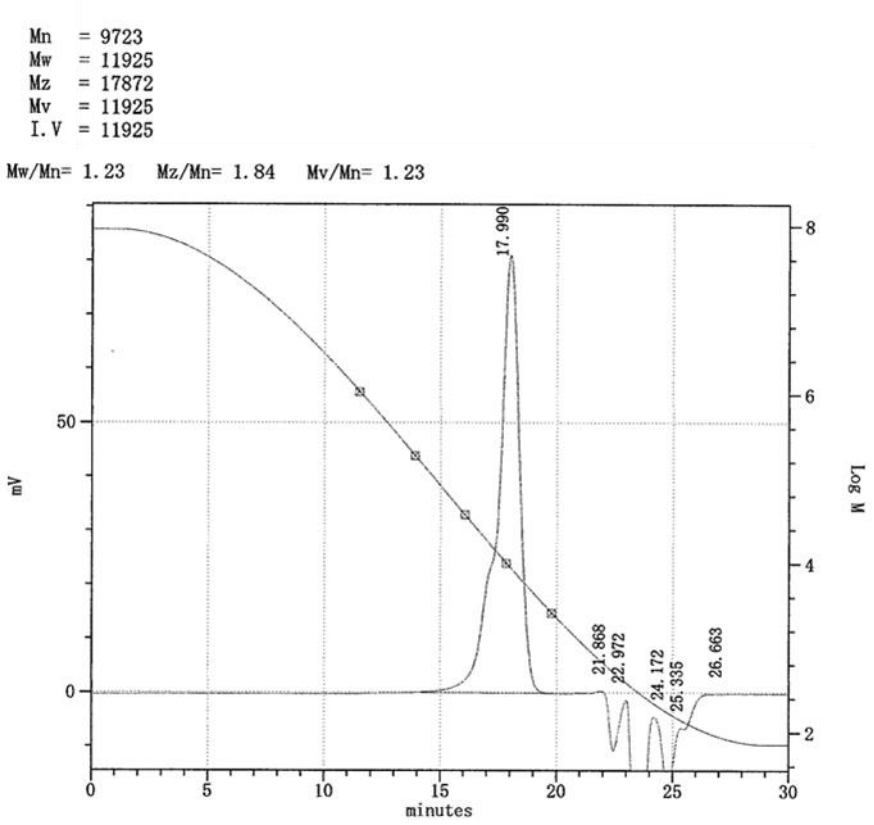

Figure S-35. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 4.0 mL/min, flow rate of Styrene (2.0 M) = 8.0 mL/min, T-250-500 mixer, 30 degree-C)

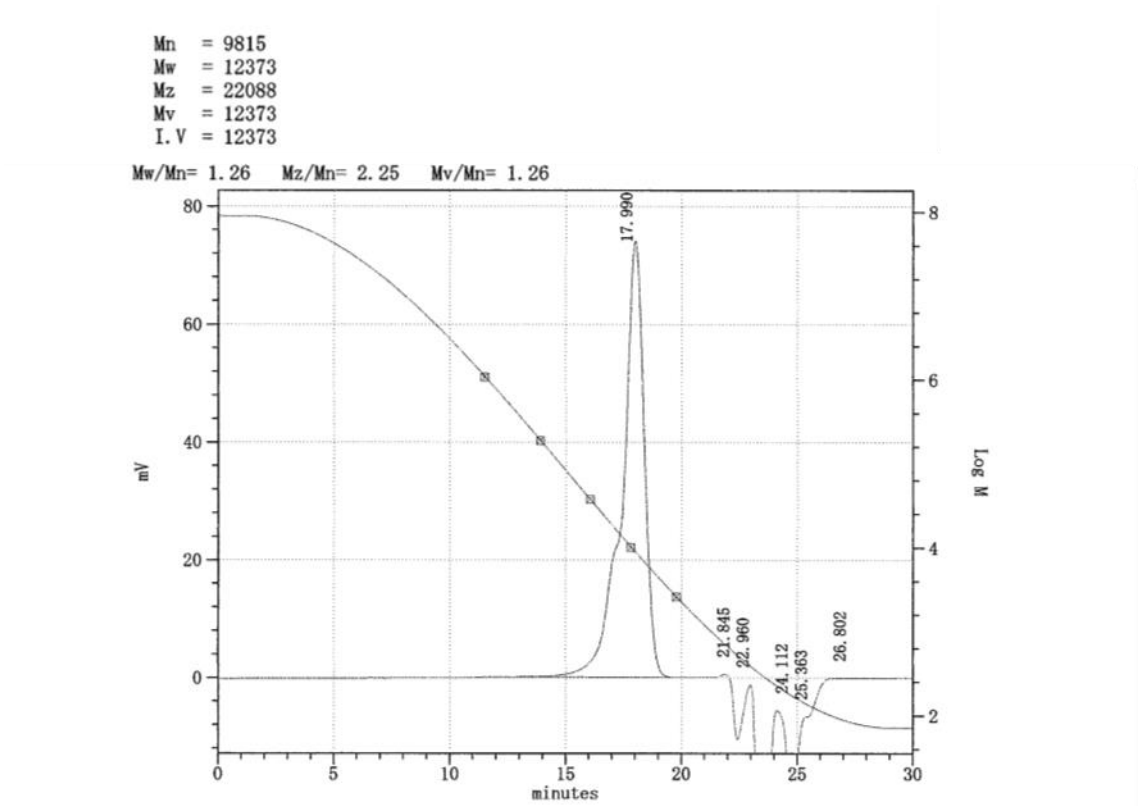

Figure S-36. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 3.0 mL/min, flow rate of Styrene (2.0 M) = 6.0 mL/min, T-250-500 mixer, 30 degree-C)

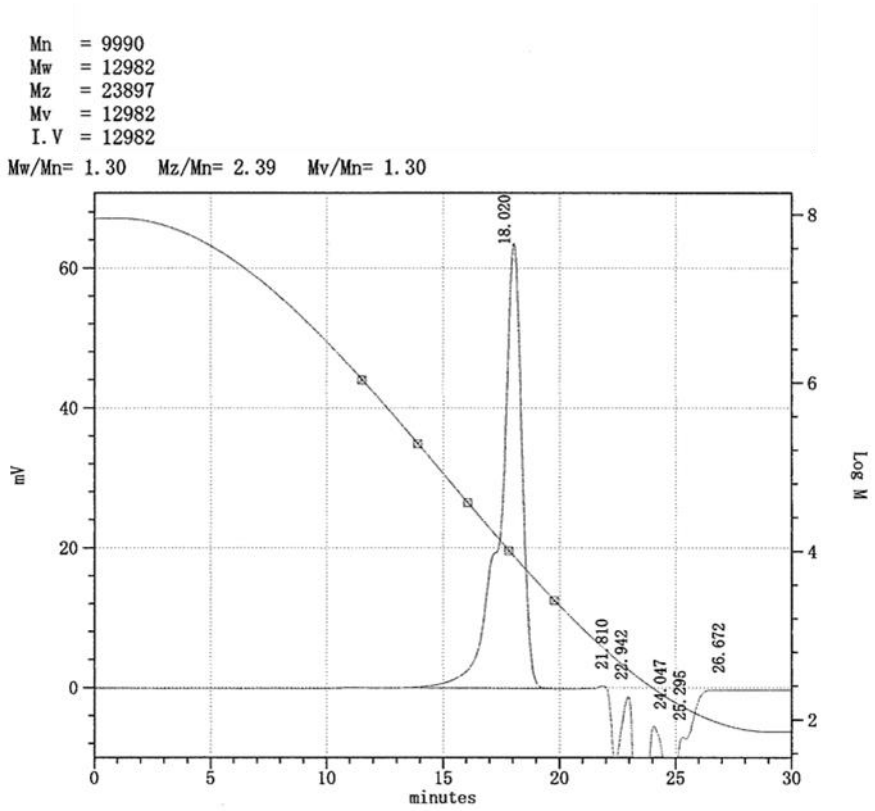

Figure S-37. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 2.0 mL/min, flow rate of Styrene (2.0 M) = 4.0 mL/min, T-250-500 mixer, 30 degree-C)

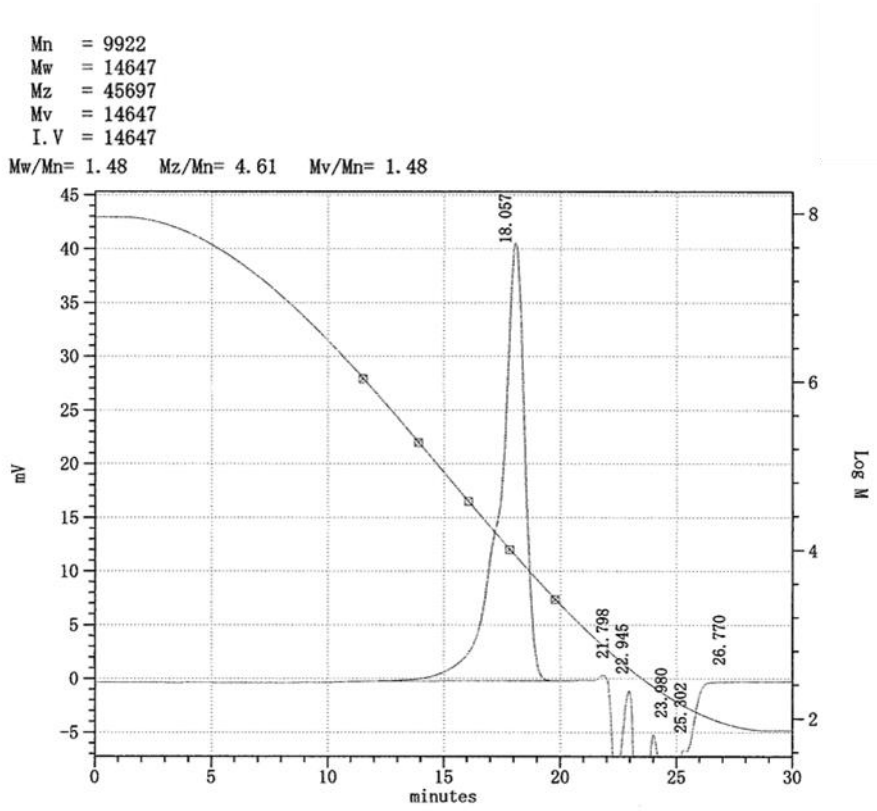

Figure S-38. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 1.0 mL/min, flow rate of Styrene (2.0 M) = 2.0 mL/min, T-250-500 mixer, 30 degree-C)

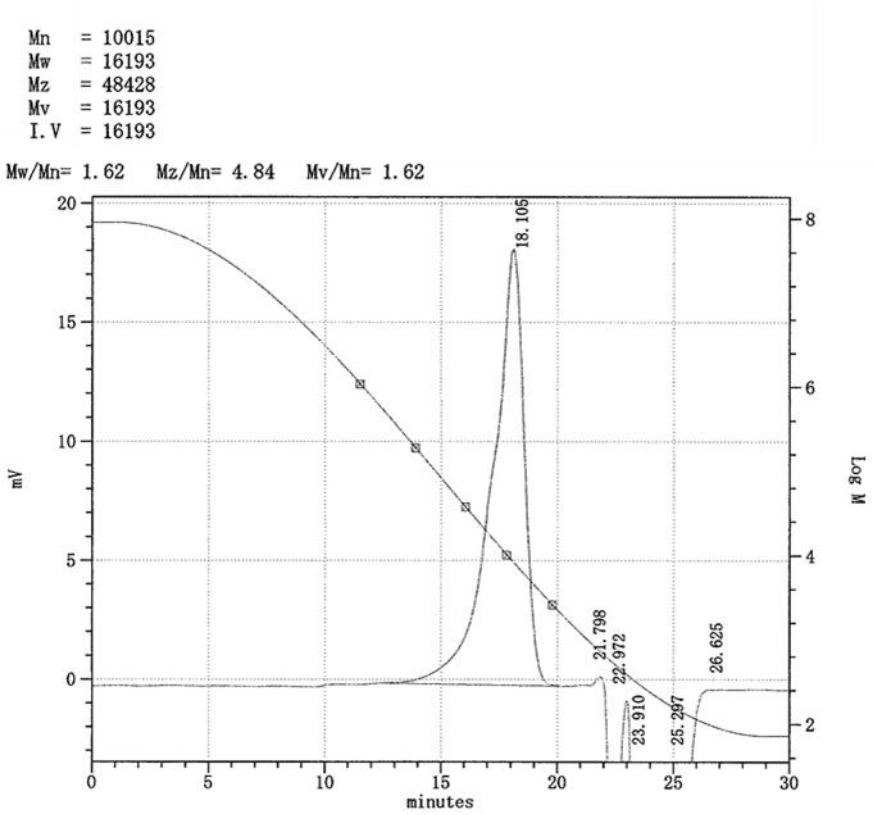

Figure S-39. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 0.5 mL/min, flow rate of Styrene (2.0 M) = 1.0 mL/min, T-250-500 mixer, 30 degree-C)

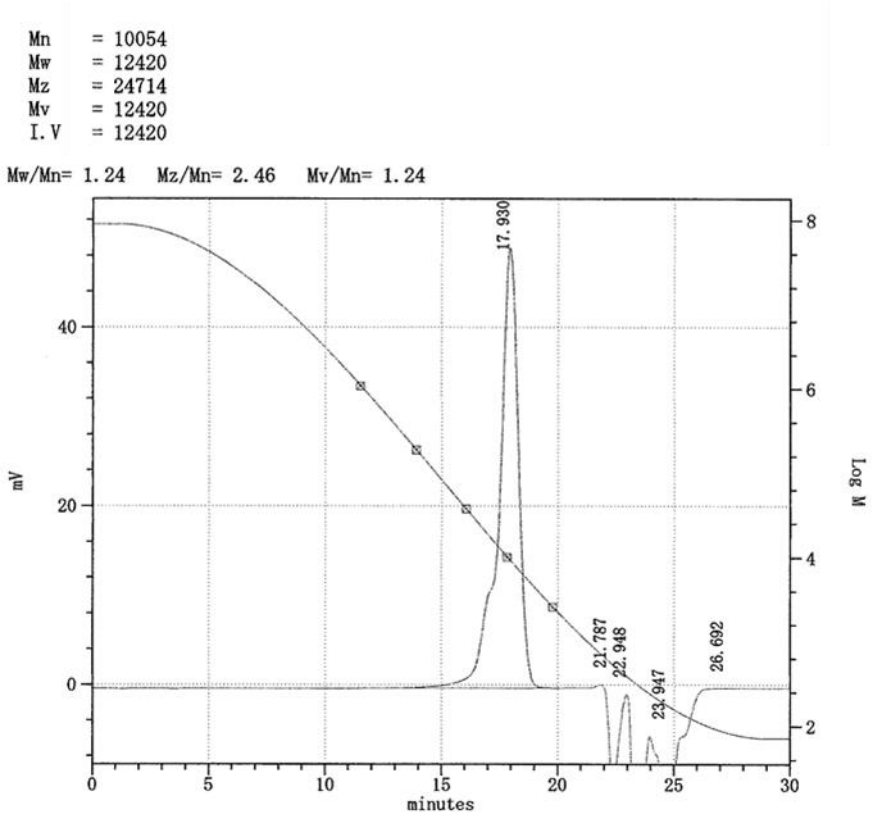

Figure S-40. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 7.5 mL/min, flow rate of Styrene (2.0 M) = 15.0 mL/min, T-500-250 mixer, 30 degree-C)

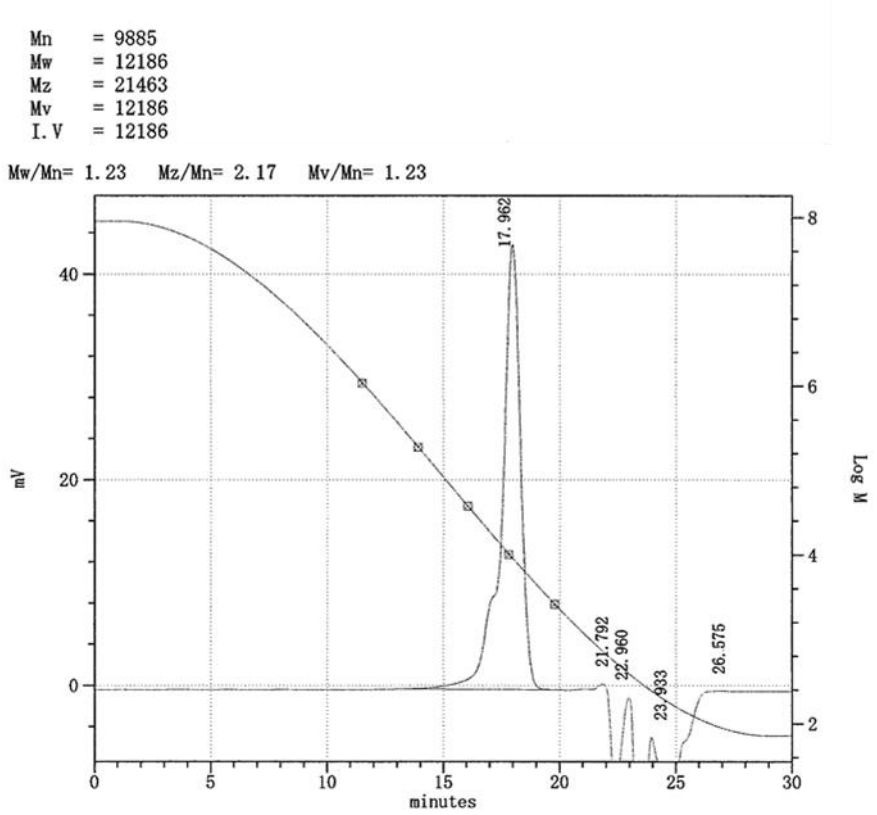

Figure S-41. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 5.0 mL/min, flow rate of Styrene (2.0 M) = 10.0 mL/min, T-500-250 mixer, 30 degree-C)

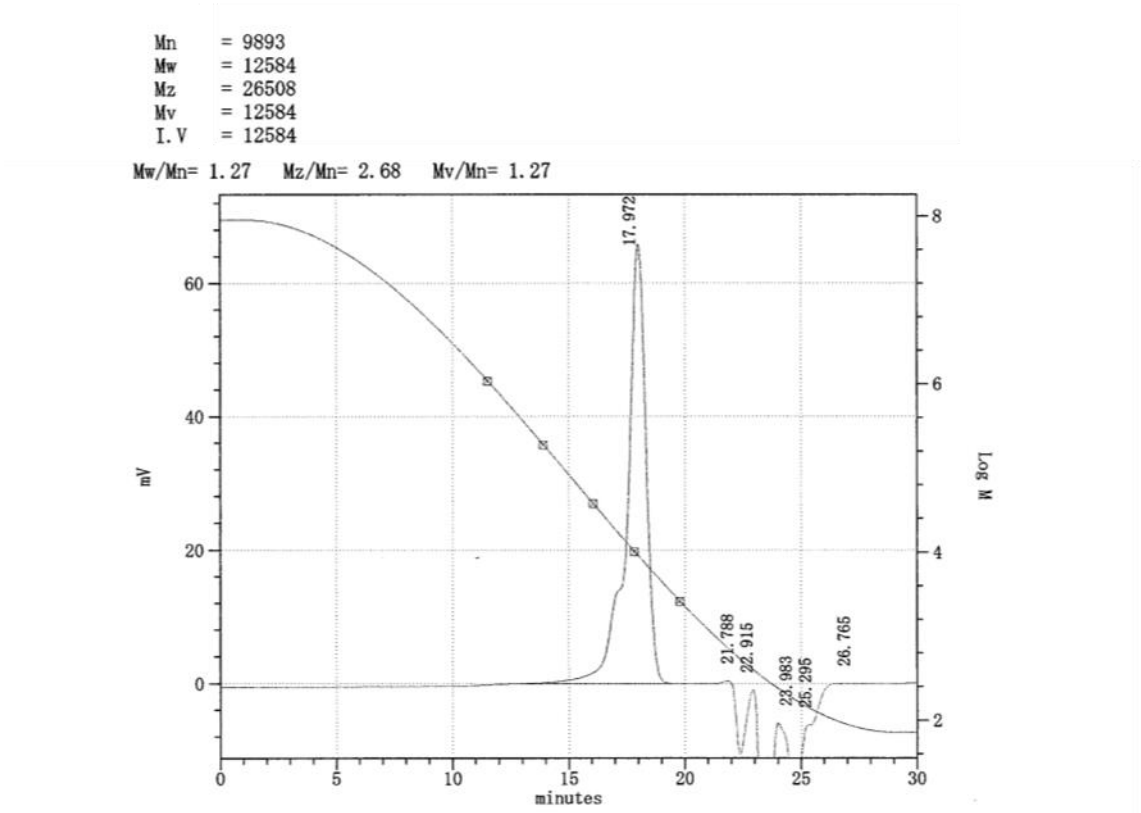

Figure S-42. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 4.0 mL/min, flow rate of Styrene (2.0 M) = 8.0 mL/min, T-500-250 mixer, 30 degree-C)

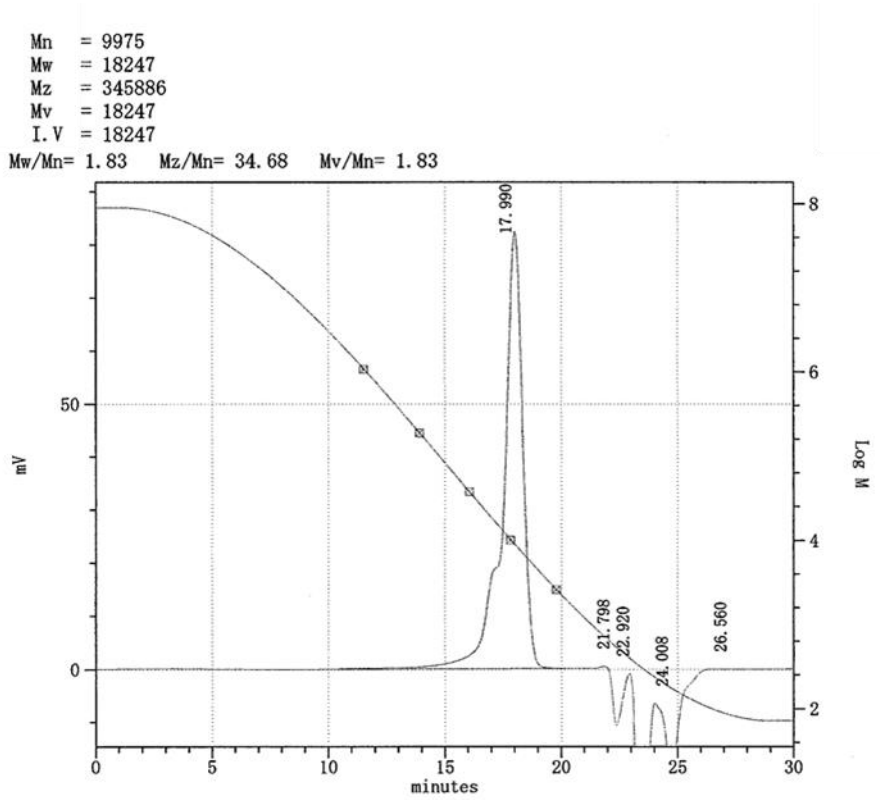

Figure S-43. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 3.0 mL/min, flow rate of Styrene (2.0 M) = 6.0 mL/min, T-500-250 mixer, 30 degree-C)

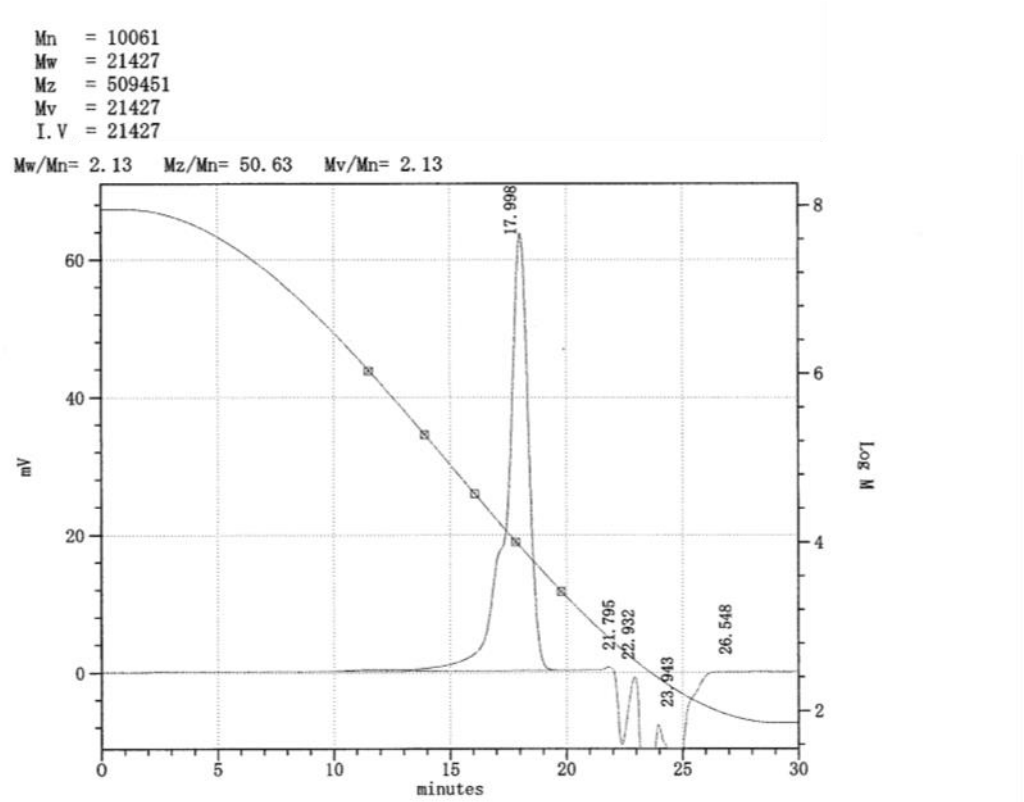

Figure S-44. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 2.0 mL/min, flow rate of Styrene (2.0 M) = 4.0 mL/min, T-500-250 mixer, 30 degree-C)

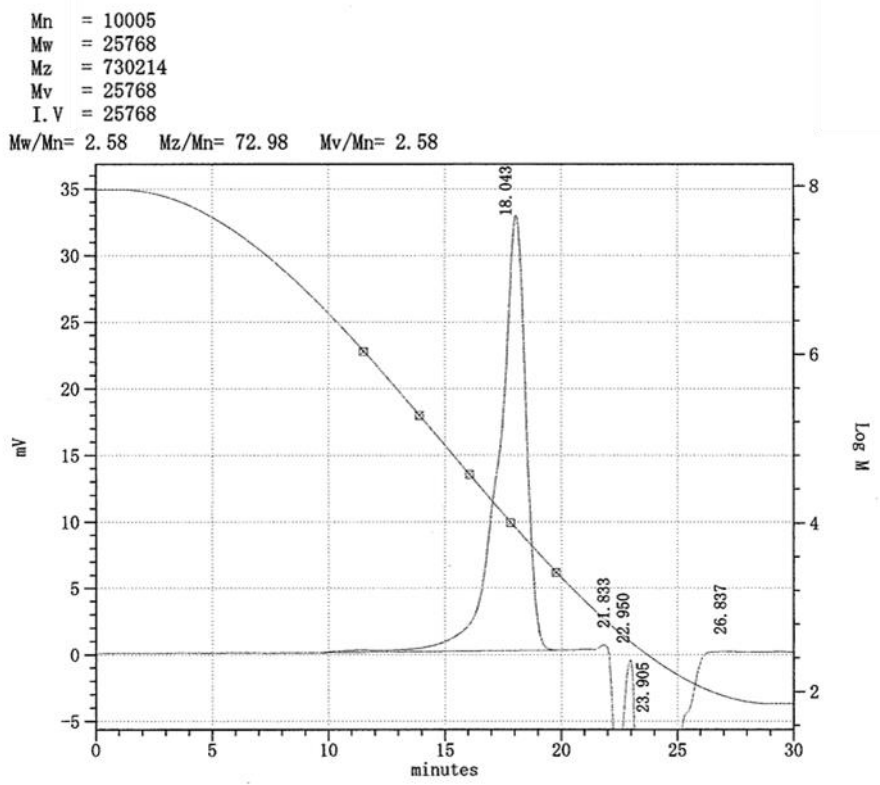

Figure S-45. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 1.0 mL/min, flow rate of Styrene (2.0 M) = 2.0 mL/min, T-500-250 mixer, 30 degree-C)

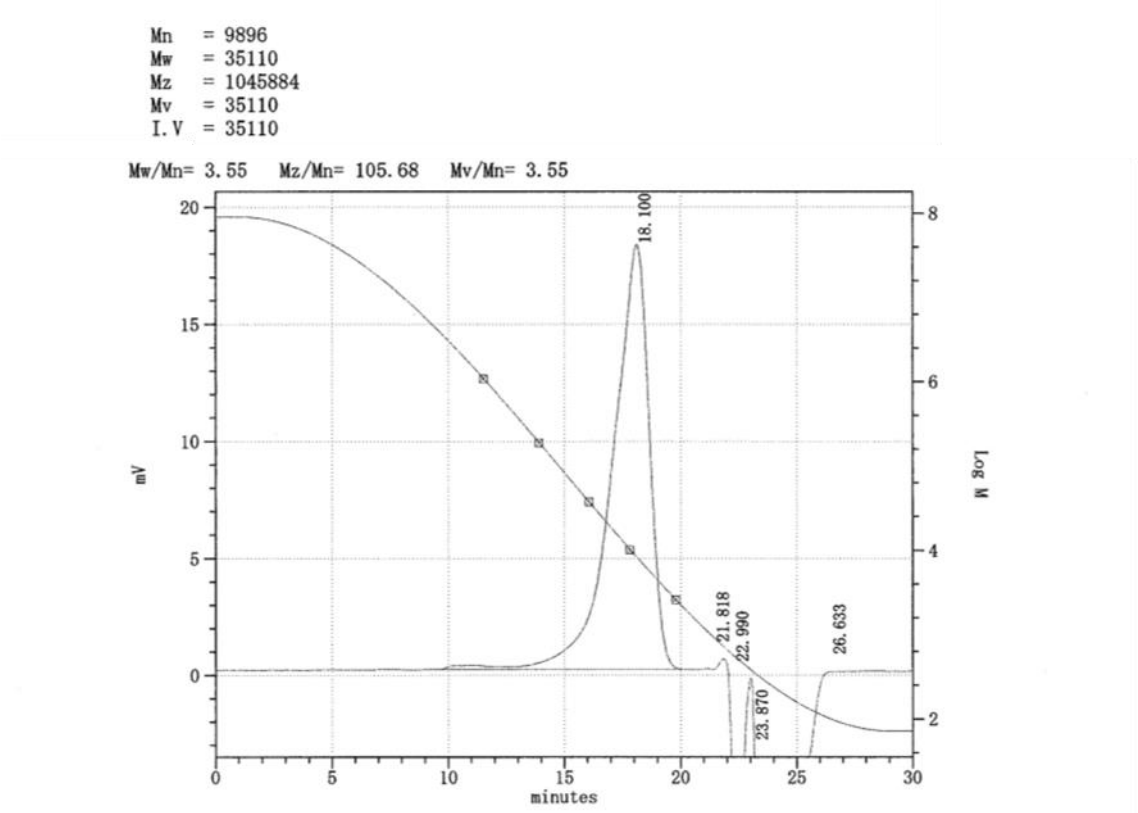

Figure S-46. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 0.5 mL/min, flow rate of Styrene (2.0 M) = 1.0 mL/min, T-500-250 mixer, 30 degree-C)

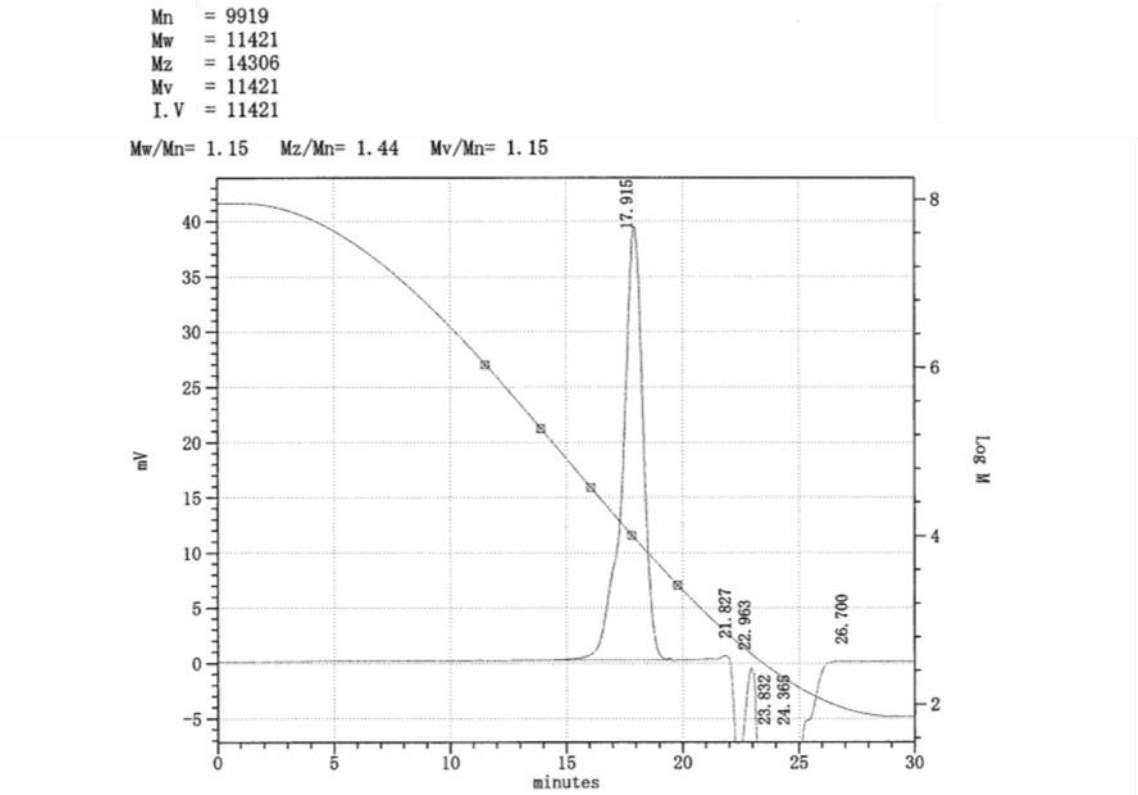

Figure S-47. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 7.5 mL/min, flow rate of Styrene (2.0 M) = 15.0 mL/min, V-500-500 mixer, 30 degree-C)

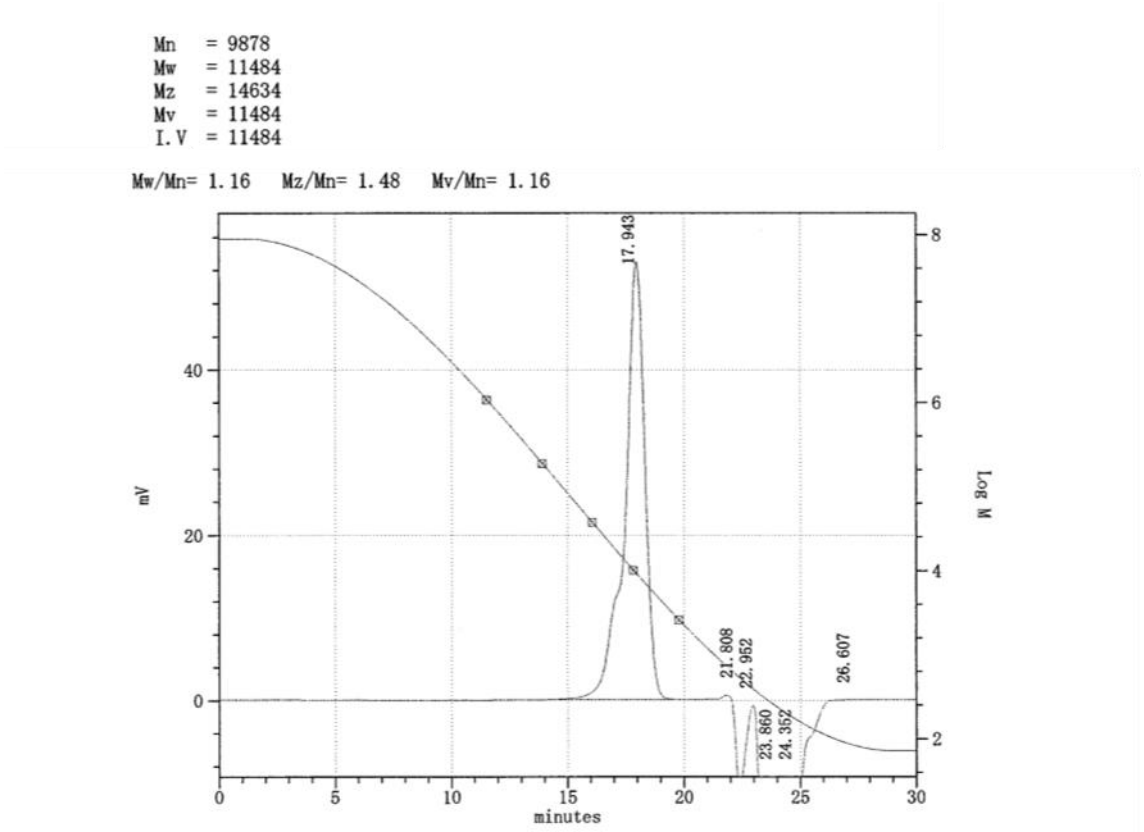

Figure S-48. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 5.0 mL/min, flow rate of Styrene (2.0 M) = 10.0 mL/min, V-500-500 mixer, 30 degree-C)

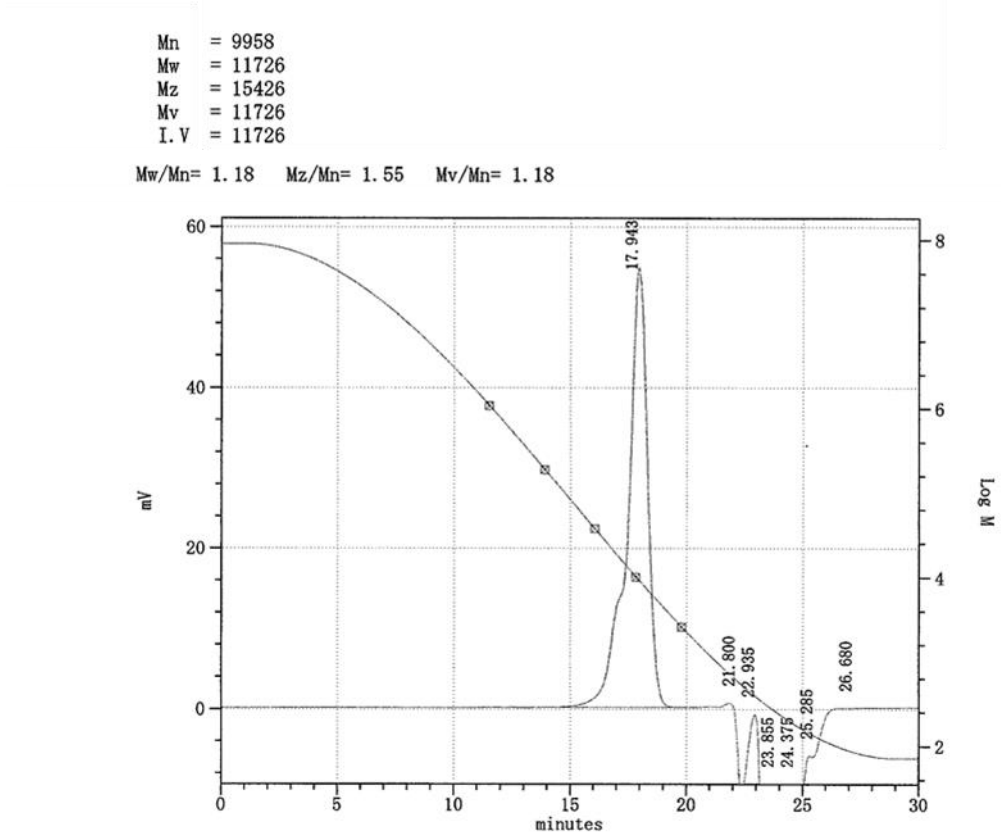

Figure S-49. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 4.0 mL/min, flow rate of Styrene (2.0 M) = 8.0 mL/min, V-500-500 mixer, 30 degree-C)

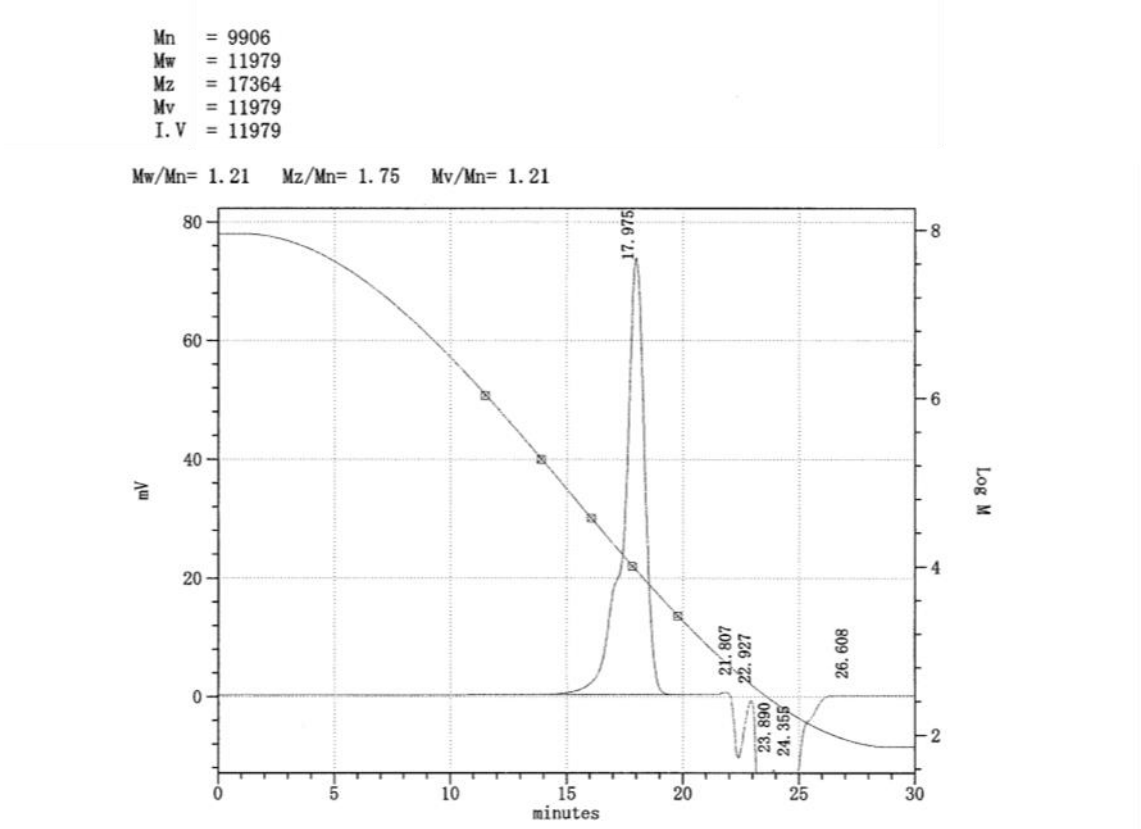

Figure S-50. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 3.0 mL/min, flow rate of Styrene (2.0 M) = 6.0 mL/min, V-500-500 mixer, 30 degree-C)

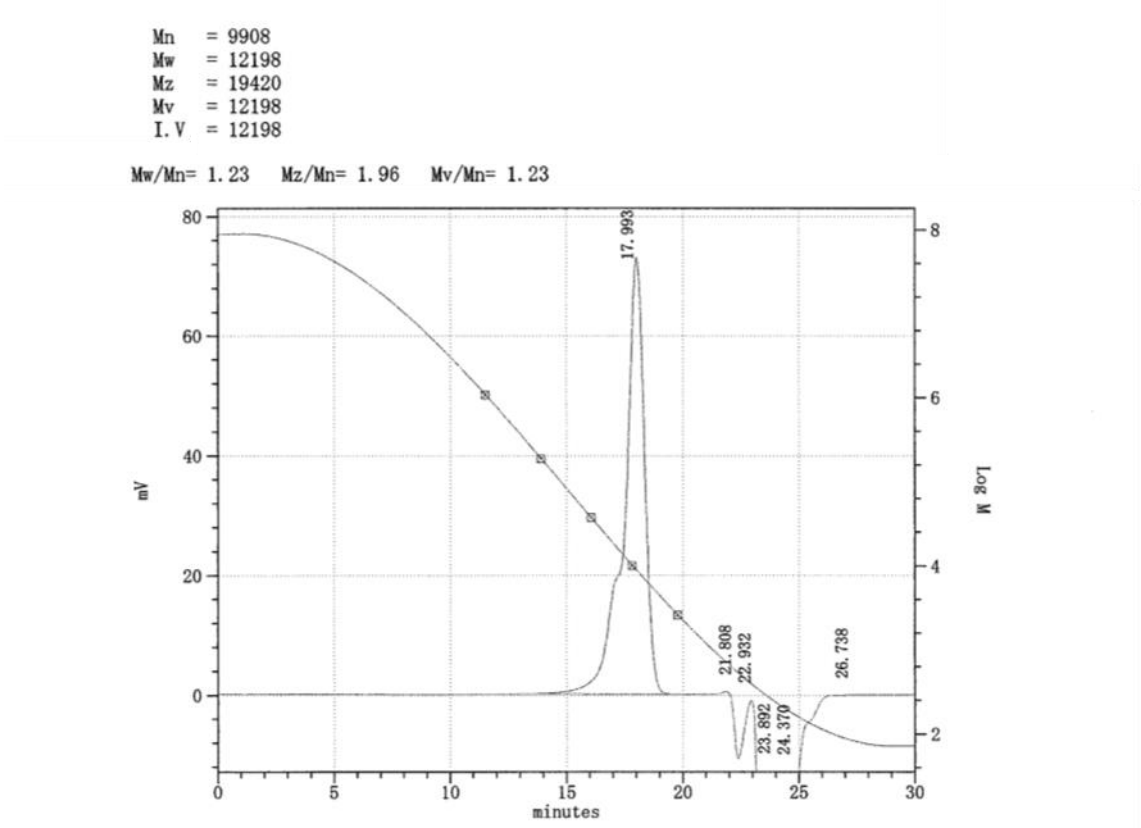

Figure S-51. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 2.0 mL/min, flow rate of Styrene (2.0 M) = 4.0 mL/min, V-500-500 mixer, 30 degree-C)

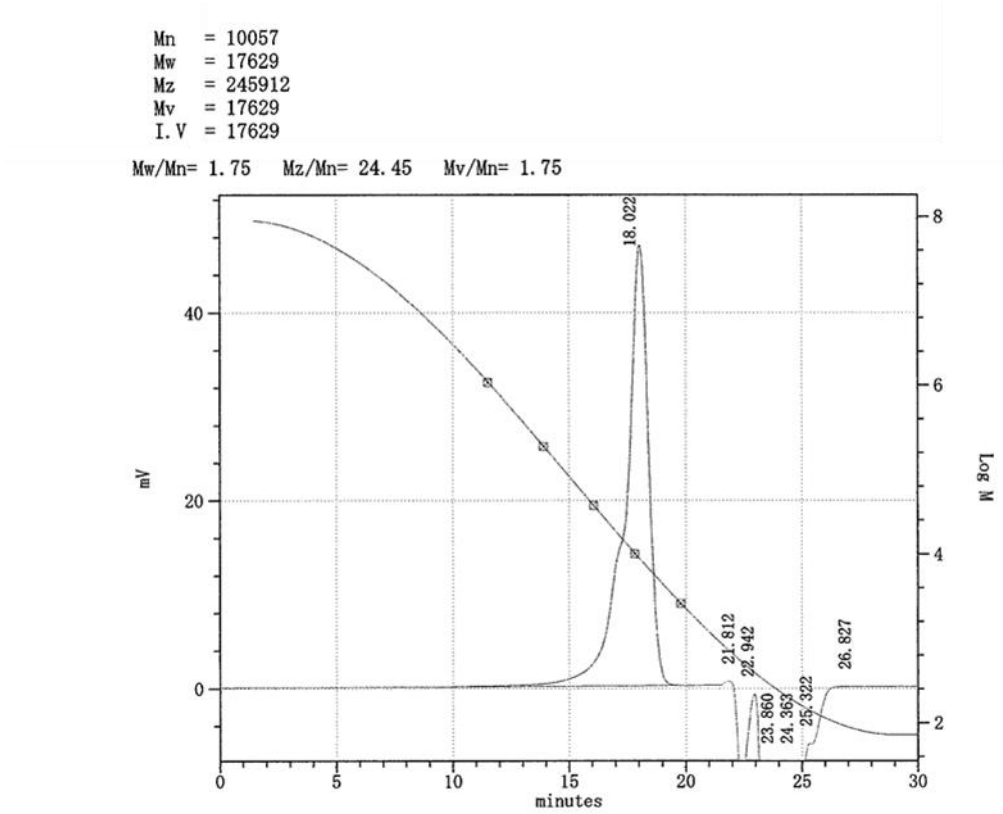

Figure S-52. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 1.0 mL/min, flow rate of Styrene (2.0 M) = 2.0 mL/min, V-500-500 mixer, 30 degree-C)

Mn = 10241
Mw = 11939
Mz = 18510
Mv = 11939
I.V = 11939

Mw/Mn= 1.17 Mz/Mn= 1.81 Mv/Mn= 1.17

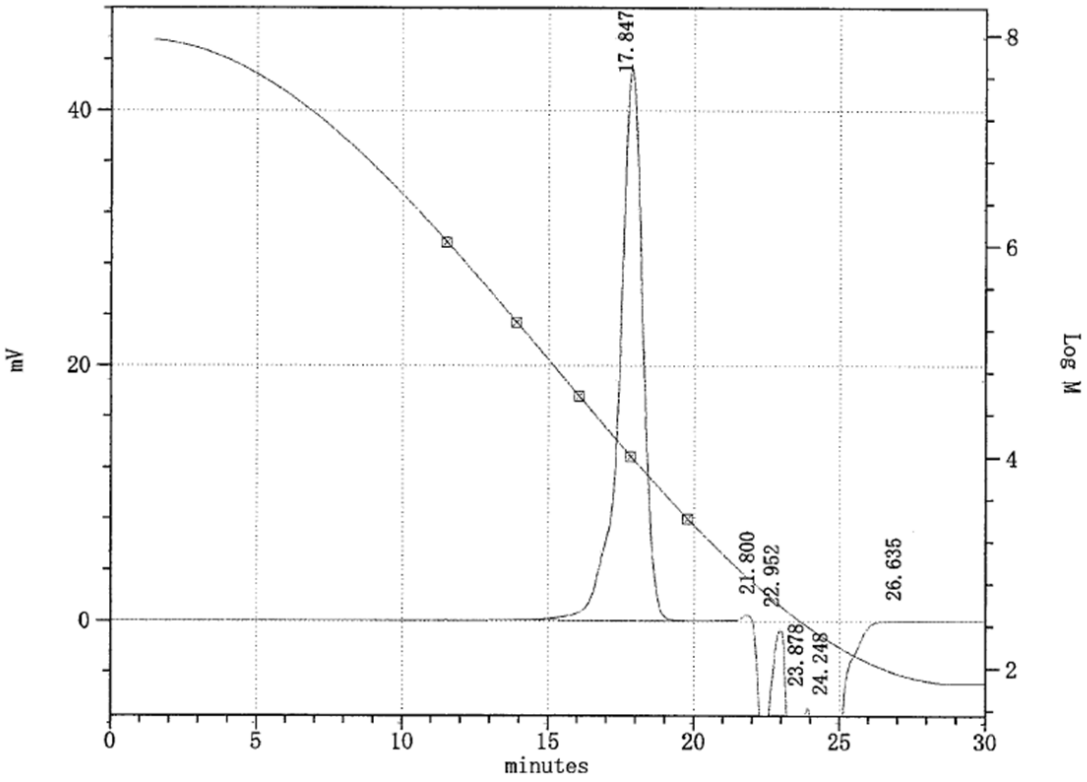

Figure S-53. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 7.5 mL/min, flow rate of Styrene (2.0 M) = 15.0 mL/min, T-250-250 mixer, 30 degree-C, 2nd trial)

Mn = 10300
Mw = 12719
Mz = 33274
Mv = 12719
I.V = 12719

Mw/Mn= 1.23 Mz/Mn= 3.23 Mv/Mn= 1.23

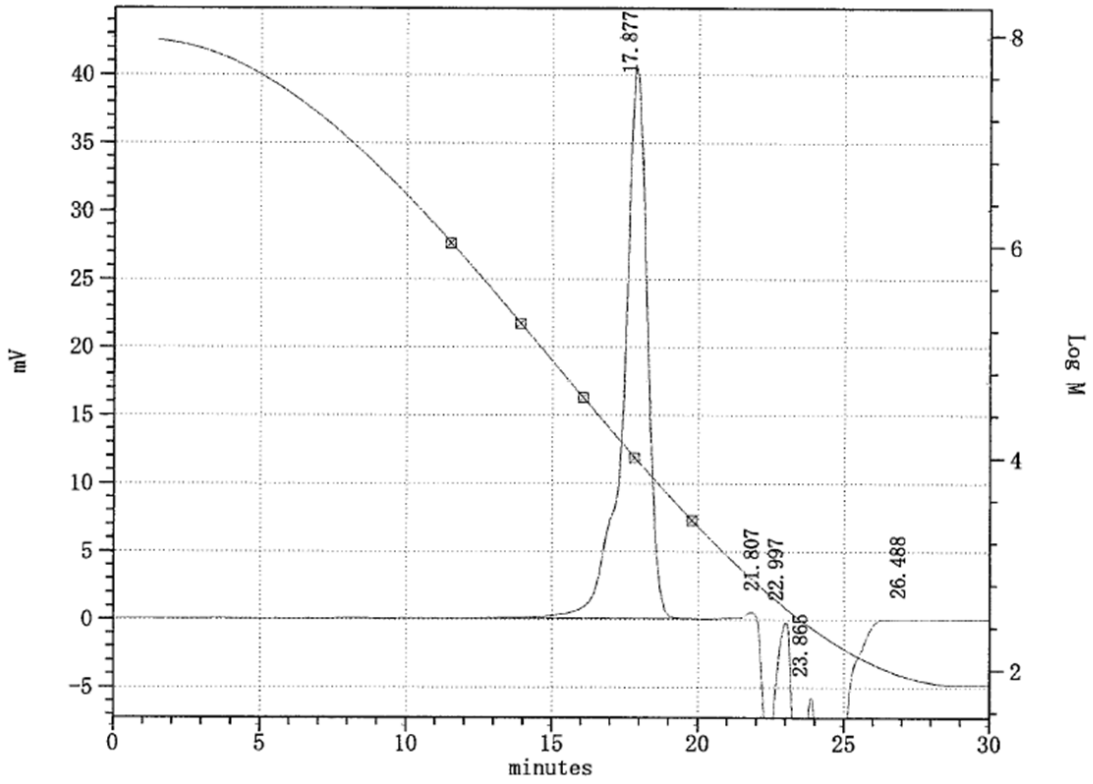

Figure S-54. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 5.0 mL/min, flow rate of Styrene (2.0 M) = 10.0 mL/min, T-250-250 mixer, 30 degree-C, 2nd trial)

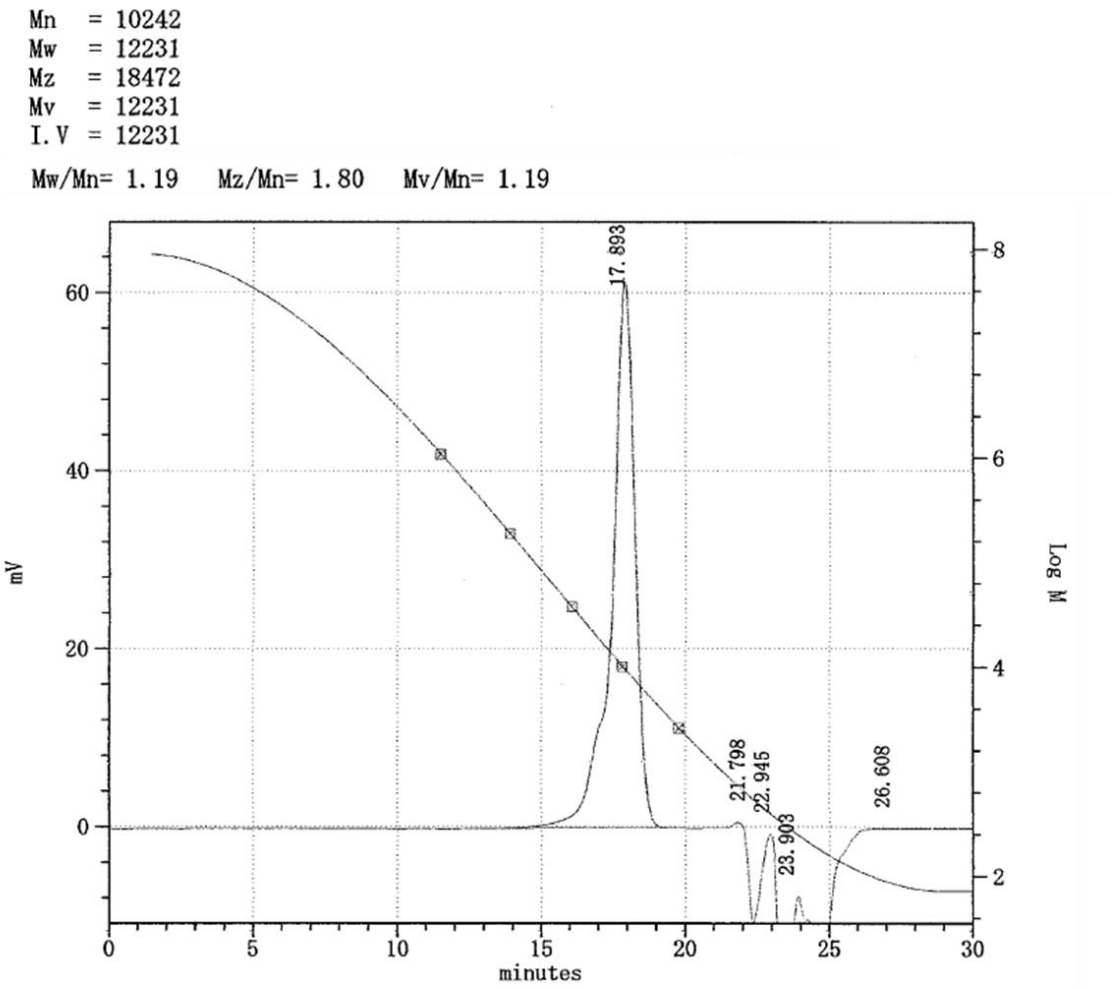

Figure S-55. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 4.0 mL/min, flow rate of Styrene (2.0 M) = 8.0 mL/min, T-250-250 mixer, 30 degree-C, 2nd trial)

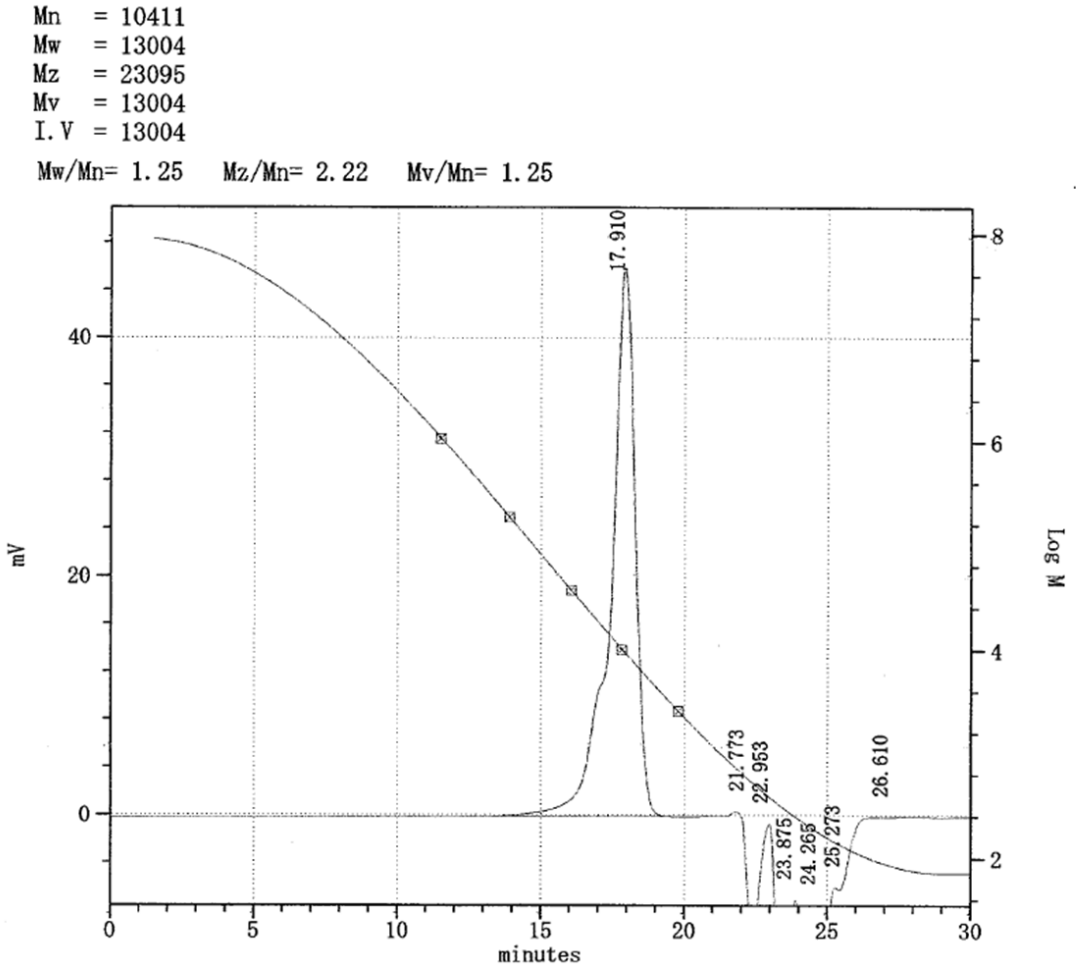

Figure S-56. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 3.0 mL/min, flow rate of Styrene (2.0 M) = 6.0 mL/min, T-250-250 mixer, 30 degree-C, 2nd trial)

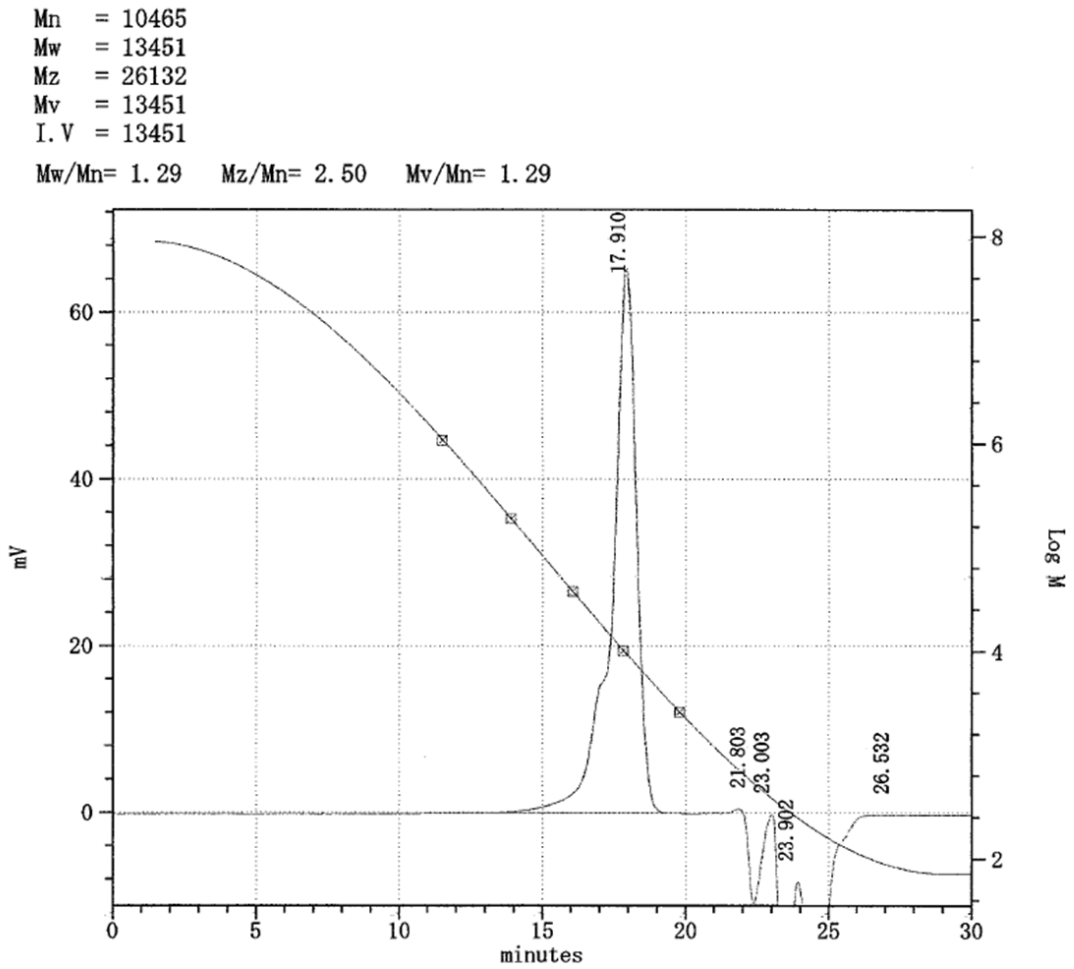

Figure S-57. *n*-BuLi Initiated Polymerization of Styrene in The Flow System (flow rate of *n*-BuLi (0.05 M) = 2.0 mL/min, flow rate of Styrene (2.0 M) = 4.0 mL/min, T-250-250 mixer, 30 degree-C, 2nd trial)

The reproducibility of anionic polymerization

2nd trial of anionic polymerization was conducted with T-250-250 mixer at 30 degree-C in some flow rate conditions to evaluate the reproducibility. The results of 2nd trial was similar to it of 1st trial which was described in the manuscript. Figure S-58 shows these results.

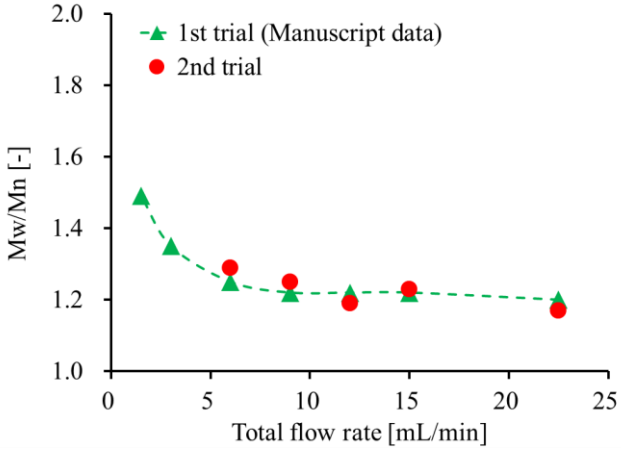

Figure S-58. Comparing the Mw/Mn of 1st and 2nd trials

Table S-1. Numeric data of 2nd trial in the above graph

		Flow rate (mL/min)				
Mixer shape	T (℃)	*n*-BuLi	Styrene	[M]/[I]	Mn	Mw/Mn
T-250-250	30	7.5	15.0	80	10000	1.17
		5.0	10.0	80	10000	1.23
		4.0	8.0	80	10000	1.19
		3.0	6.0	80	10000	1.25
		2.0	4.0	80	10000	1.29

Explaining the results of Dushman reaction

What the mixability of three mixers was V ≧ T > Y in terms of Mw/Mn in this study.

On the other hand, figure S-59 and S-60 show results of Dushman reaction. In the result, mixability order of Dushman reaction was also V > T > Y.

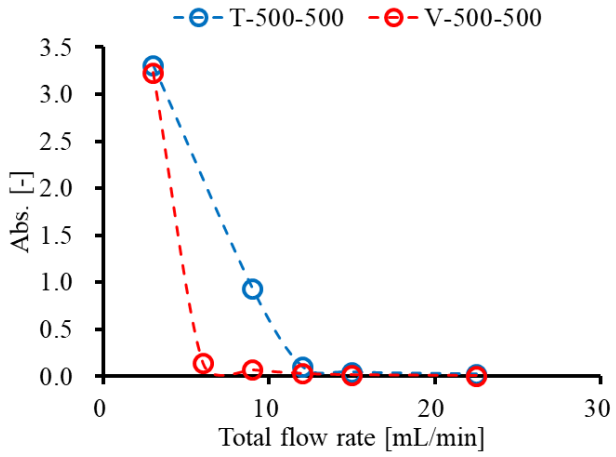

Figure S-59. Comparing V-shape and T- shape mixers in Dushman reaction

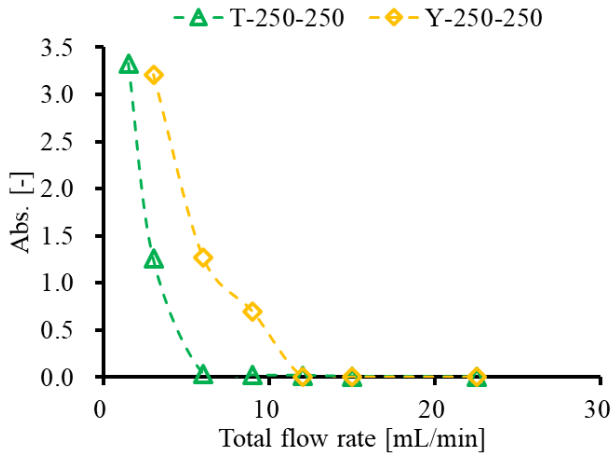

Figure S-60. Comparing Y-shape and T- shape mixers in Dushman reaction

Table S-2. Numeric data of each graph in Dushman reaction

Flow rate (mL/min)		Absorbance [352 nm] (-)			
Solution A	Solution B	T-250-250	T-500-500	V-500-500	Y-250-250
0.75	0.75	3.33	3.43	3.37	3.34
1.50	1.50	1.26	3.31	3.23	3.21
3.00	3.00	0.04	3.23	0.14	1.27
4.50	4.50	0.02	0.93	0.07	0.70
6.00	6.00	0.02	0.10	0.03	0.01
7.50	7.50	0.01	0.05	0.02	0.00
11.25	11.25	0.00	0.03	0.01	0.00