

SpiralTOF™

Measurement of synthetic polymers
Polystyrene

Polystyrene (PS)1000 and 2400 were measured using the JMS-S3000 SpiralTOF. The $[M+H]^+$ peaks of PS with the basic monomer units of 104u (Fig. 1) were observed for each sample. The mass spectrum of PS1000 and an expanded view around m/z 1000 are shown in Fig. 2. The resolving power at m/z 1101 was approximately 50,000 (FWHM). The mass difference between 8, 9 and 10-mers showed a very good match with the theoretical mass number (104.0626) calculated from the elemental composition of the repeating unit (C_8H_8). The mass spectrum of PS2400 and the expanded view of the isotopic pattern of 23-mer are shown in Fig 3. The observed isotopic pattern of the 23-mer is in very good agreement with the simulated isotopic distribution (R 60,000).

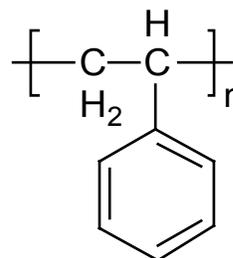
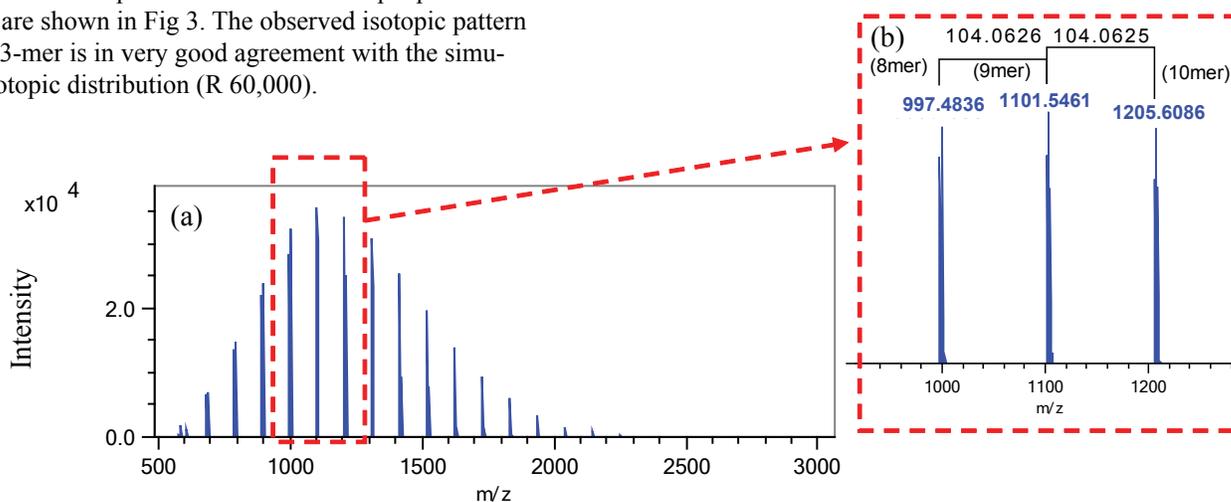
Figure 1. PS repeat unit ($C_8H_8=104.0626$).

Figure 2. Mass spectrum of (a) PS1000 and (b) 8-10mer.

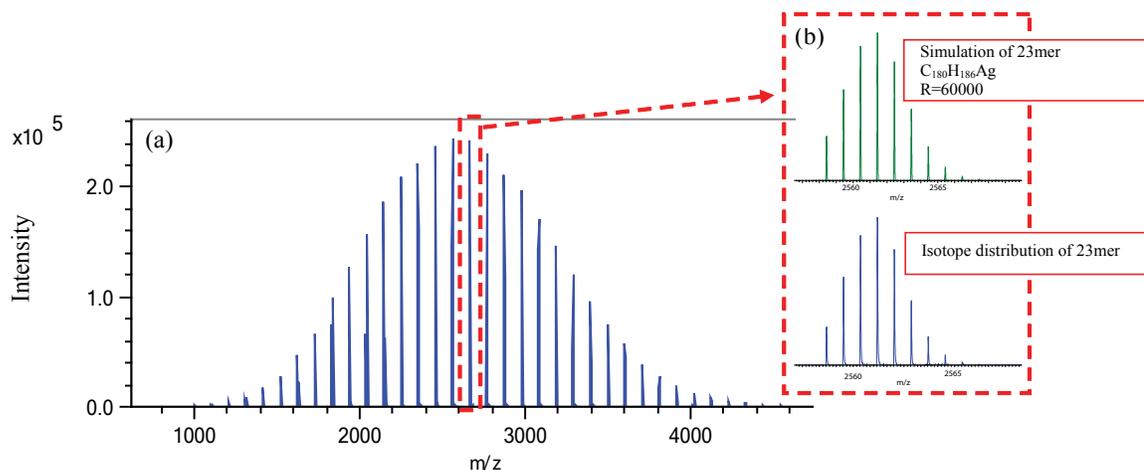


Figure 3. Mass spectrum of (a) PS2400 and (b) the 23mer with its corresponding isotopic simulation.