Electronic Supplementary Information (ESI)

Surface-assisted laser desorption/ionization time-of-flight mass spectrometry of small drug molecules and high molecular weight synthetic/biological polymers using electrospun composite nanofibers

Juan Bian and Susan V. Olesik*

Department of Chemistry and Biochemistry, The Ohio State University, 100 West 18th Avenue, Columbus, OH 43210, United States

*Corresponding author: Susan V. Olesik
Phone: (614) 292-0733, Fax: (614) 688-5402,
E-mail: olesik.1@osu.edu

Table S-1. Diameter and morphology with addition of carbon to electrospun solution

CNTs ratio to copolymer	**Diameter/nm (RSD%)**
0.04 %	368±48 (13.0%)
0.08 %	272±29 (10.6%)
0.38 %	221±30 (13.4%)
0.75 %	172± 24 (14.0%)
1.0 %	Spindle-like beads
1.5 %	Spherical particles

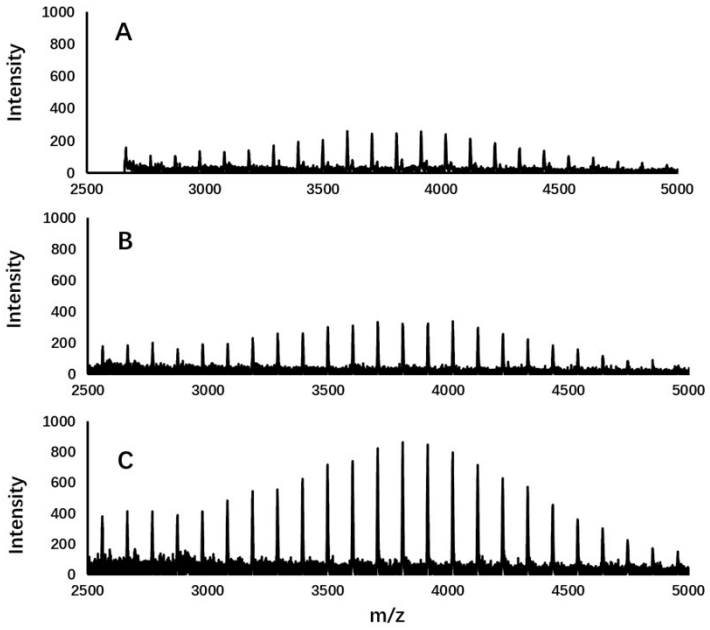

Fig. S-1 SALDI mass spectra of polystyrene (PS 4000) using different polymeric substrates: (A) PAN substrate, (B) PAN/Nafion® substrate, (C) PAN/Nafion®/CNTs substrate. The concentration of PS 4000 is 25 mg/mL.

Table S-2. Reproducibility for synthetic polymer using different polymeric substrates

Substrate / Analyte	PAN S/N (RSD)	PAN/Nafion® S/N (RSD)	PAN/Nafion®/CNTs S/N (RSD)
PS 4000 (25 mg/mL)	6.1±1.3 (21%)	10.9±1.3 (12%)	17.3±1.8 (11%)
PS 2000 (25 mg/mL)	46.4±6.6 (14%)	73.3±7.5 (10%)	100.4±5.6 (6%)

*S/N were calculated based on 3 spectra with 50 laser shots

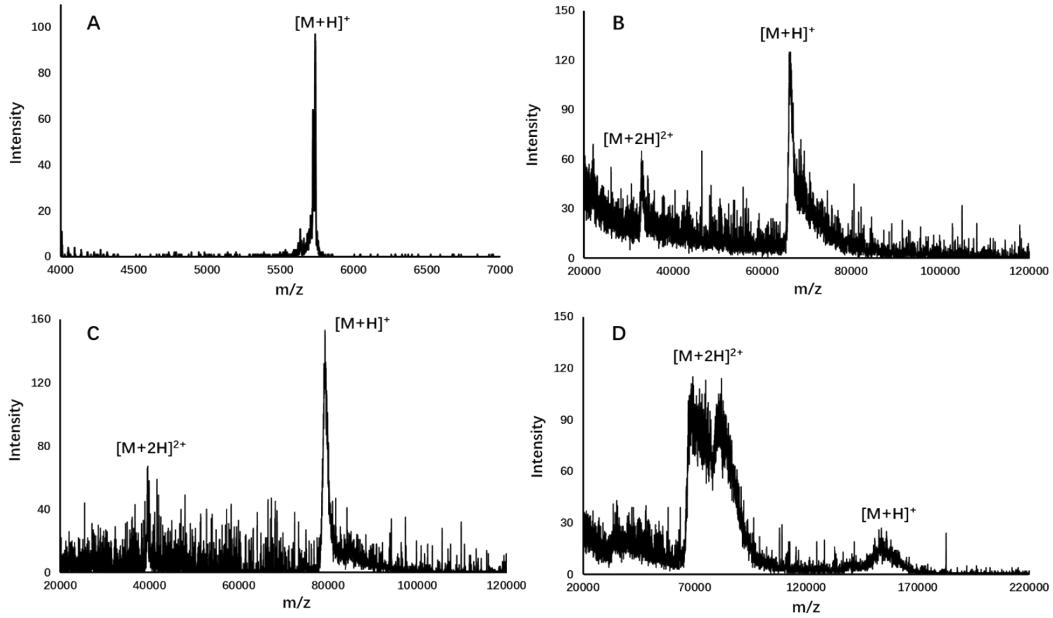

Fig. S-2 ME-SALDI mass spectra of (A) insulin 2 μg/mL, (B) BSA 20 μg/mL, (C) TF 50 μg/Ml and (D) IgG 10 μg/mL using PAN/Nafion®/CNTs substrate. The matrix concentration of sinapinic acid is 40 mg/mL.

Table S-3. Limit of detection for peptides and proteins in ME-SALDI

Protein	Concentration (μg/mL)	LOD* (fmol)
Insulin	2	3.5×10^{1}
BSA	20	3.0×10^{1}
TF	50	6.2×10^{1}
IgG	10	0.7×10^{1}

* LOD=Limit of detection (S/N=3) with surface concentration.