

Electronic Supplementary Information

Regulation of Lysozyme Activity Based on Thermotolerant Protein/Smart Polymer Complex Formation

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Table S1 Characterization of PEG-MA.

Table S2 Characterization of purified PEAMA-*g*-PEG.

Supplementary data

Figure S4 Changes in the normalized enzymatic activity of lysozyme in the presence of PEG-OH(5k)

Supplementary figures and tables

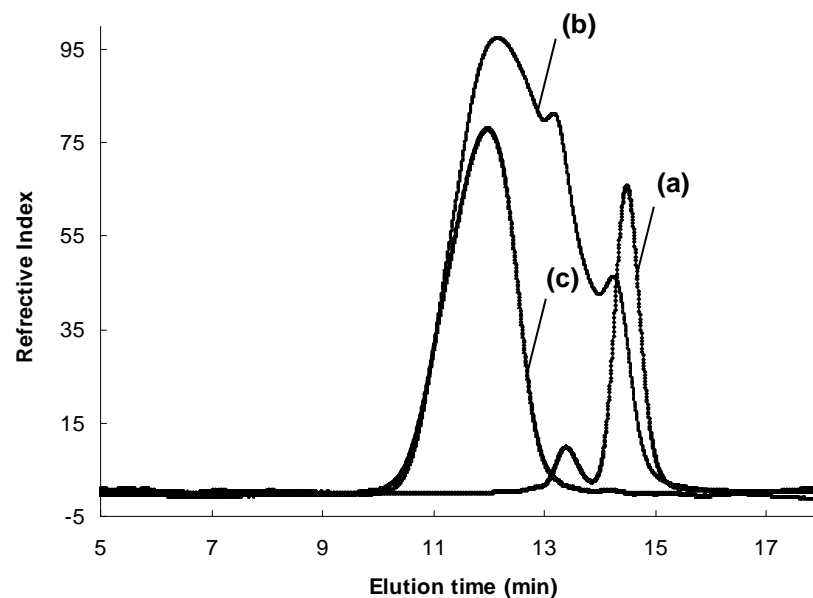


Figure S1: Size exclusion chromatogram (SEC) of synthesized polymers. (a) PEG-MA macromonomer, (b) PEAMA-g-PEG before HPLC purification, and (c) PEAMA-g-PEG after HPLC purification. The molecular weight and the molecular weight distribution were determined by Gel permeation chromatography (TOSOH HLC-8120, TOSHO Co., Tokyo, Japan) with TSK gel columns (TSKgel SuperHZ3000 + HZ4000) and an internal refractive index (RI) detector (TOSO HHLC-8020RI) using the calibration curve of PEG. THF containing 0.5 wt % triethylamine was used as the eluent at a flow rate of 0.35 mL/min at 35°C.

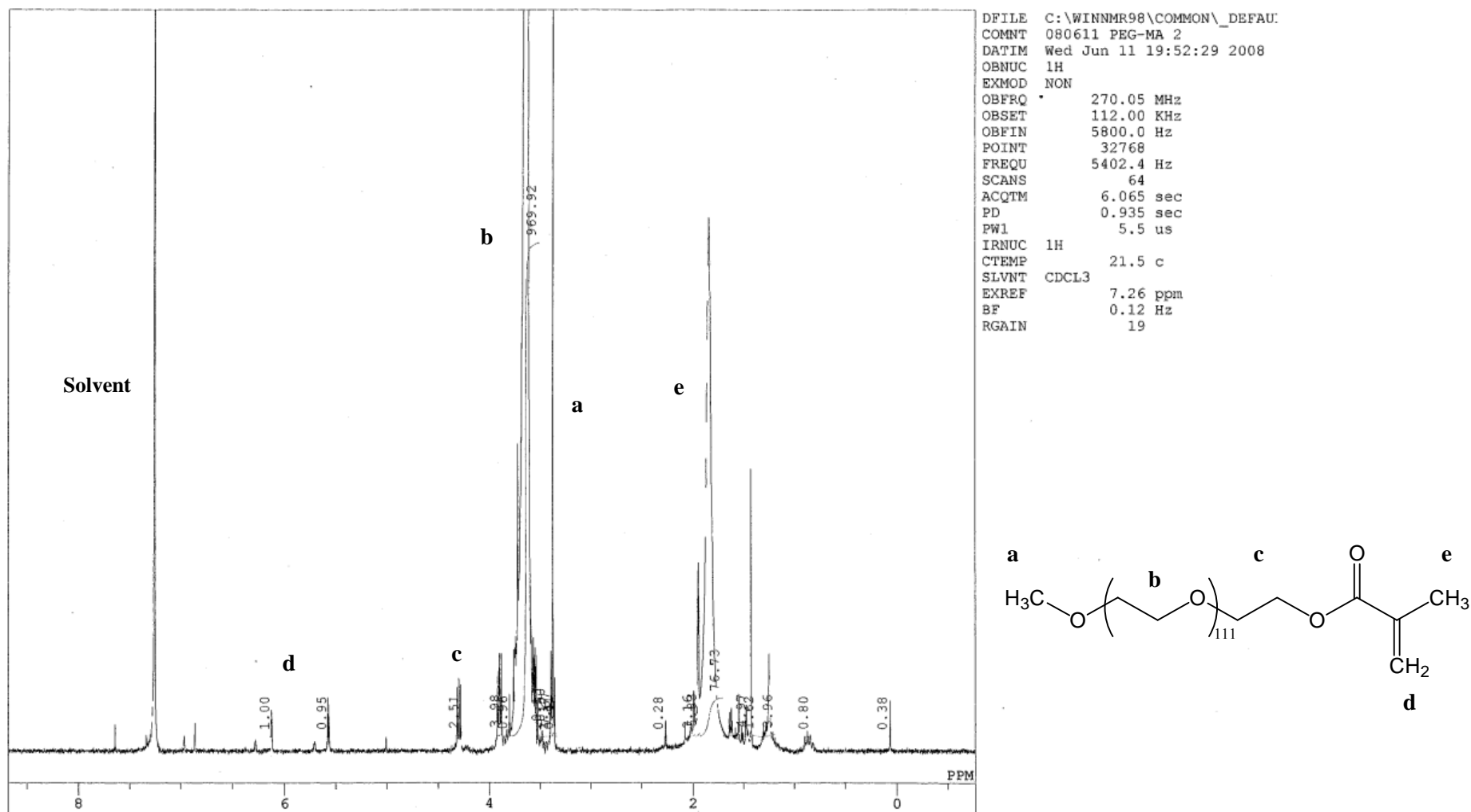


Figure S2: ¹H NMR spectrum of PEG-MA. The characterization of the PEG-MA was carried out by ¹H-NMR (JEOL EX-270 spectrometer, JEOL Ltd., Tokyo, Japan) at 270 MHz in CDCl₃ solution at room temperature.

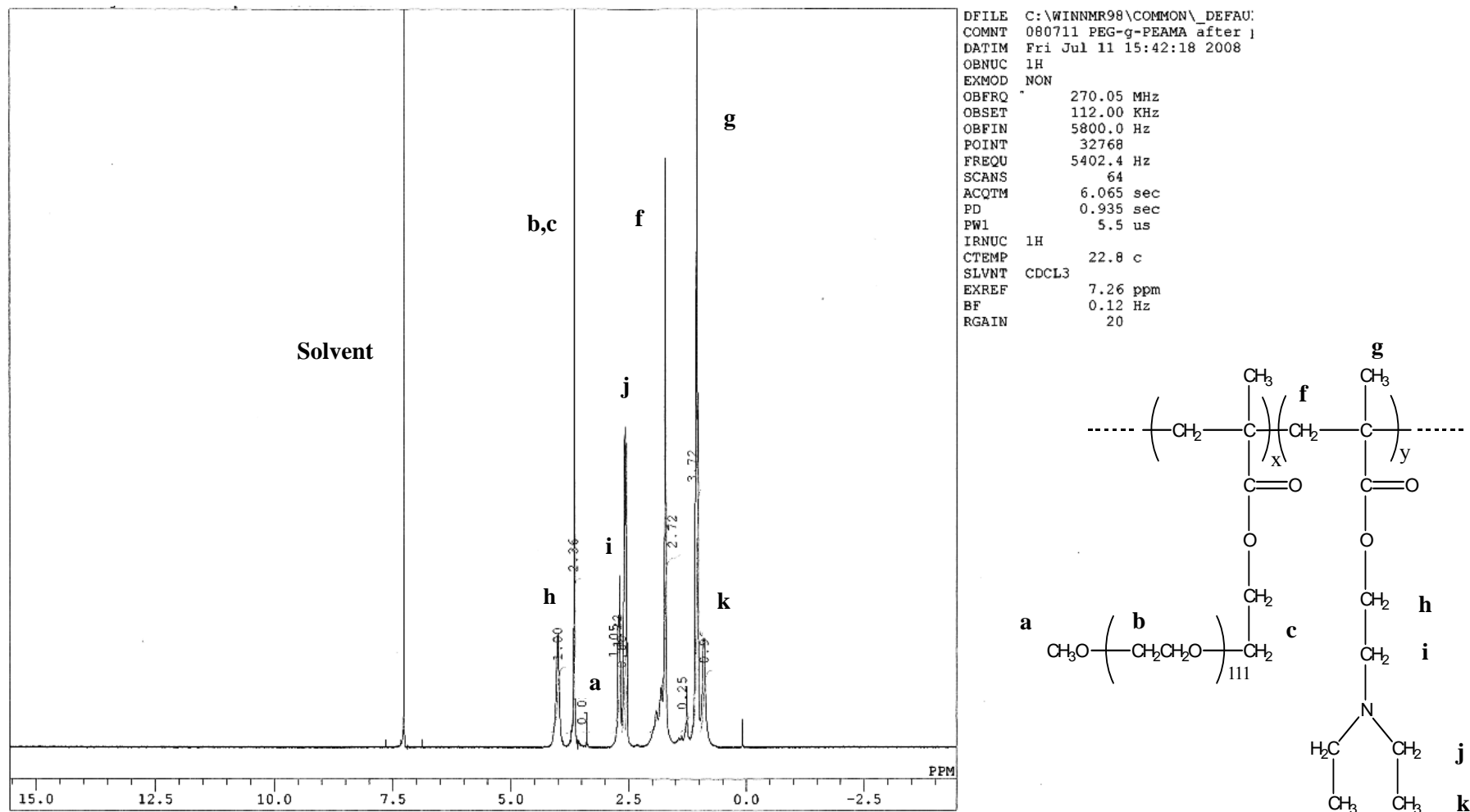


Figure S3: ^1H NMR spectrum of purified PEAMA-g-PEG. The characterization of the PEAMA-g-PEG was carried out by ^1H -NMR (JEOL EX-270 spectrometer, JEOL Ltd., Tokyo, Japan) at 270 MHz in CDCl_3 solution at room temperature.

Table S1: Characterization of PEG-MA.

^a M_n	^a M_w	^a PDI	^b Functionality
4,700	4,900	1.04	78 %

^aNumber-averaged molecular weight (M_n), weight-averaged molecular weight (M_w), and polydispersity index (PDI) were obtained from SEC analysis. ^bEnd group functionality was determined from ¹H-NMR analysis.

Table S2: Characterization of purified PEAMA-g-PEG.

^a M_n	^a M_w	^a PDI	^a M_n of PEG segment (PEG-MA)	^b Molecular weight of PEAMA segment (Number of EAMA units)	Number of PEG chains
28,000	39,000	1.38	4,700	19,000 (104)	2

^a M_n , M_w , PDI of PEAMA-g-PEG, and M_w of PEG segment were obtained from SEC analysis. ^bMolecular weight of PEAMA segment in PEAMA-g-PEG were determined by ¹H-NMR analysis.

Supplementary data

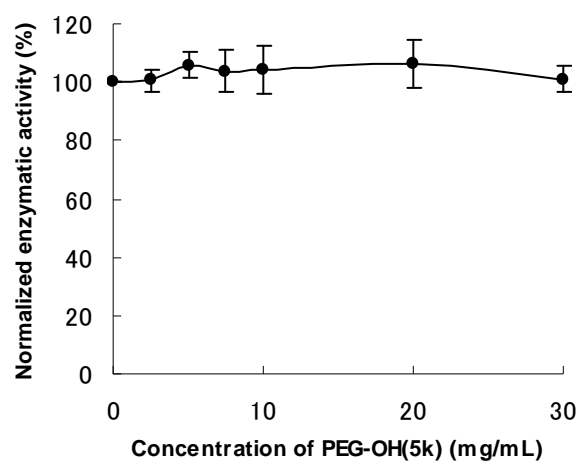


Figure S4 Changes in the normalized enzymatic activity of lysozyme in the presence of PEG-OH(5k). The experimental conditions were same as those shown in Figure 1, which details were described in the experimental section.