

## Supporting Information

# Preparation of Glycoside Polymer Micelles with Antioxidant Polyphenolic Cores Using Alkylated Poly(arbutin)s

*Ayaka Seto,<sup>1</sup> Rika Kajiwara,<sup>1</sup> Jaeun Song,<sup>2</sup> Eeseul Shin,<sup>2</sup> Byeong-Su Kim,<sup>3</sup> Hisayoshi*

*Kofujita,<sup>4</sup> Yoshiyuki Oishi,<sup>1</sup> and Yuji Shibasaki<sup>1\*</sup>*

<sup>1</sup> Department of Chemistry & Biological Sciences, Faculty of Science & Engineering,

Iwate University, 4-3-5 Ueda, Morioka, Iwate 020-8551, Japan.

<sup>2</sup> Department of Chemistry, Ulsan National Institute of Science and Technology

(UNIST), Ulsan 44919, Korea

<sup>3</sup> Department of Chemistry, Yonsei University, Seoul 03722, Korea

<sup>4</sup> Department of Forest Science, Faculty of Agriculture, Iwate University, 3-18-8 Ueda,

Morioka, Iwate 020-8550, Japan.

\*E-mail: [yshibasa@iwate-u.ac.jp](mailto:yshibasa@iwate-u.ac.jp)

## Legend of Figures and Schemes

**Scheme 1s.** Polymerization of Arb

**Figure 1s.** FT-IR (KBr) spectra of (a)Arb, (b)poly(Arb)

**Figure 2s.**  $^1\text{H}$  NMR spectra of (a)Arb, (b)poly(Arb) in  $\text{D}_2\text{O}$

**Figure 3s.**  $^{13}\text{C}$  NMR spectra of (a)Arb, (b)poly(Arb) in  $\text{DMSO-}d_6$

**Figure 4s.** UV-Vis spectra of (a) Arb and (b) poly(Arb) in water

**Figure 5s.** FT-IR (KBr) spectra of (a) poly(Arb)- $\text{C}_{30}$ , (b) poly(Arb)- $\text{C}_{80}$  (c) poly(Arb)- $\text{C}_{120}$  and (d) poly(Arb)- $\text{C}_{180}$

**Figure 6s.**  $^1\text{H}$  NMR spectra of Arb, poly(Arb), and poly(Arb)- $\text{C}_{8x}$  in  $\text{DMSO-}d_6$

**Figure 7s.** GPC profiles of poly(Arb)- $\text{R}_{50}$  (NMP, LiBr)

**Figure 8s.** UV-vis spectrum of poly(Arb)- $\text{C}_{80}$  (2.0 mg/mL) containing  $\beta$ -carotene (0.5 mg/mL) in water

**Figure 9s.** DLS measurement of poly(Arb) in water (1.0 mg/mL) at 20 °C.

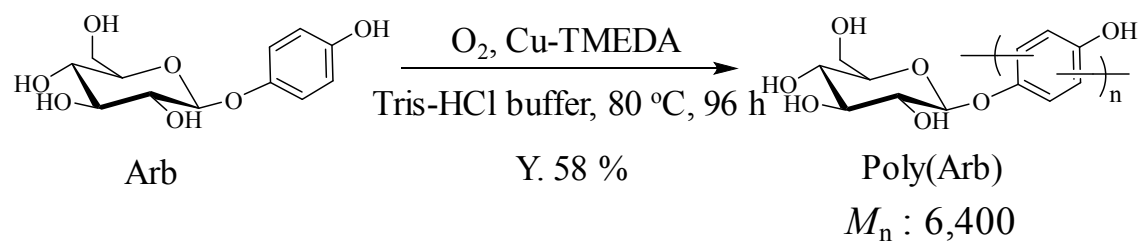
**Figure 10s.** TEM image of poly(Arb)- $\text{C}_{30}$  micelles

**Figure 11s.** TEM image of poly(Arb)- $\text{C}_{50}$  micelles

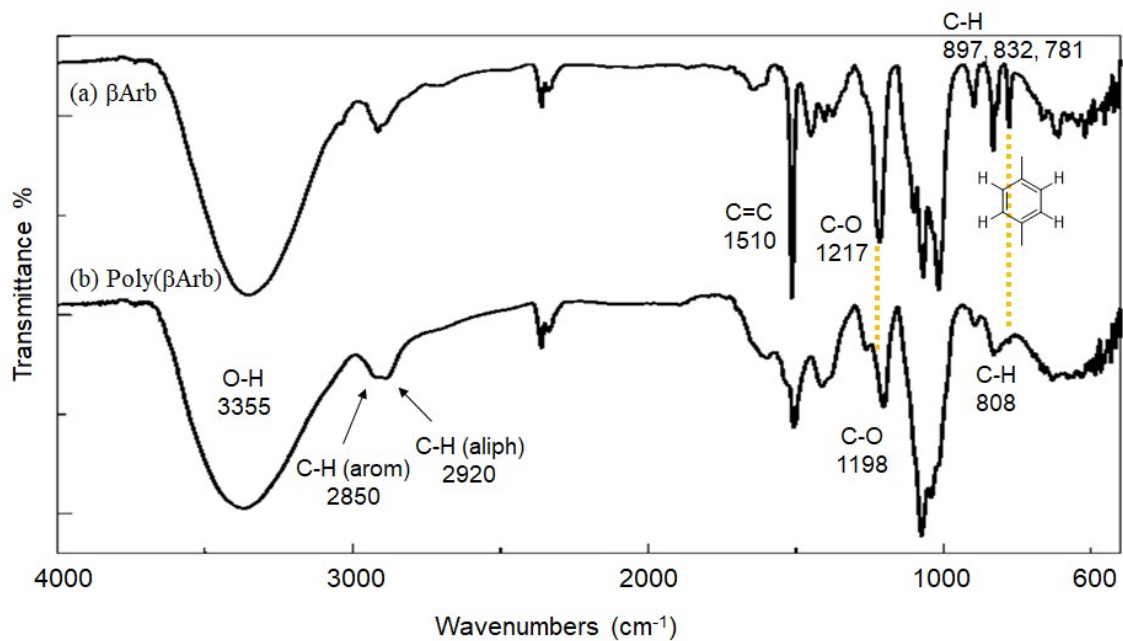
**Figure 12s.** TEM image of poly(Arb)- $\text{C}_{80}$  micelles

**Figure 13s.** TEM image of poly(Arb)- $\text{C}_{120}$  micelles

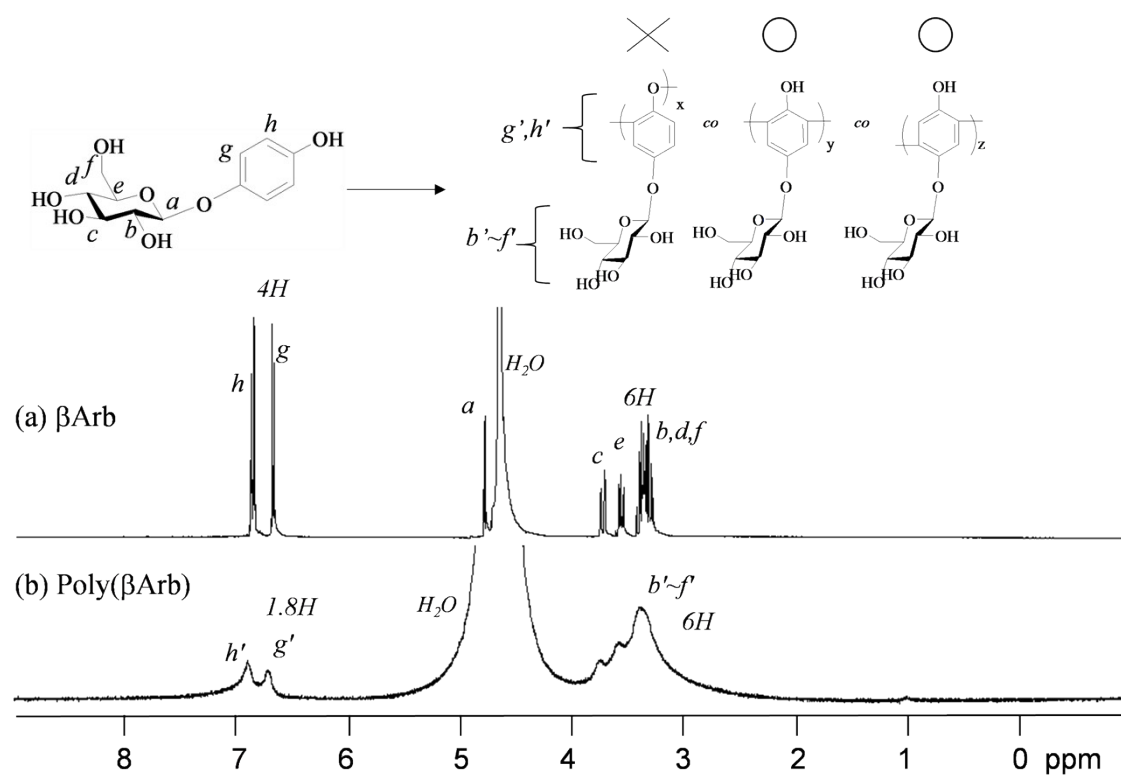
**Figure 14s.** TEM image of poly(Arb)- $\text{C}_{80}$  micelles



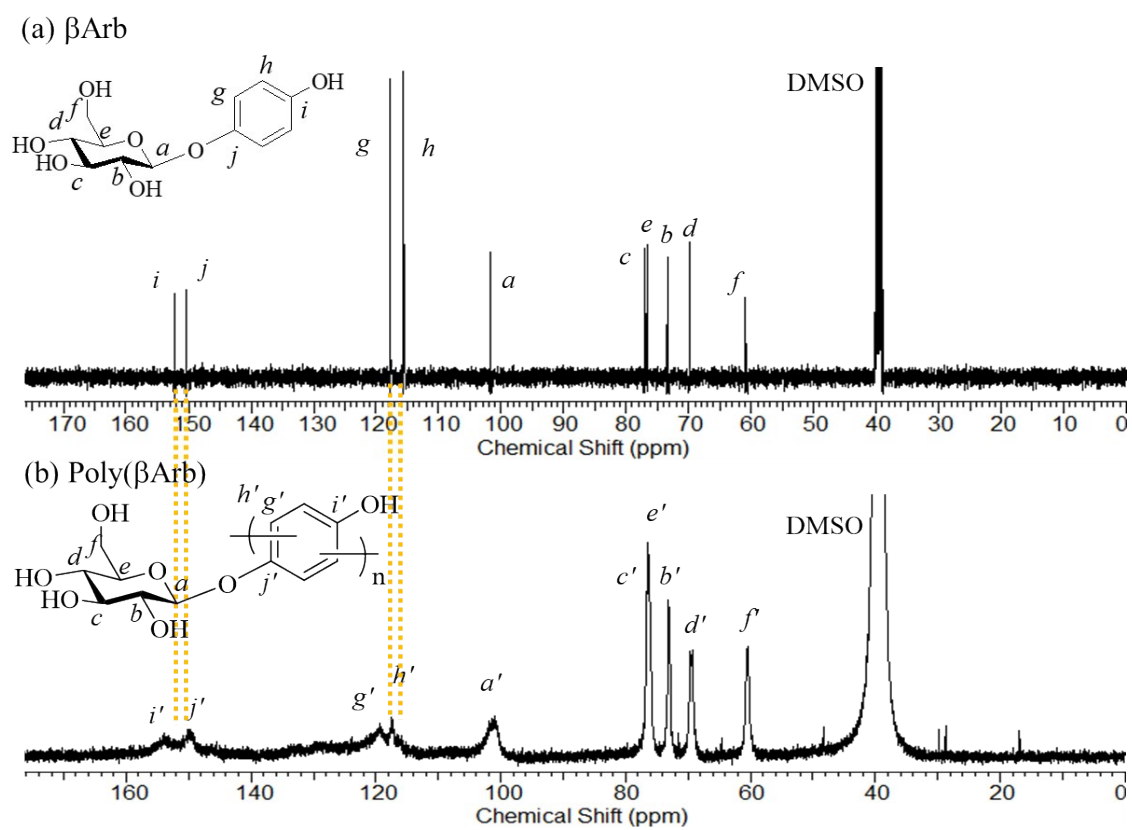
**Scheme 1s.** Polymerization of Arb



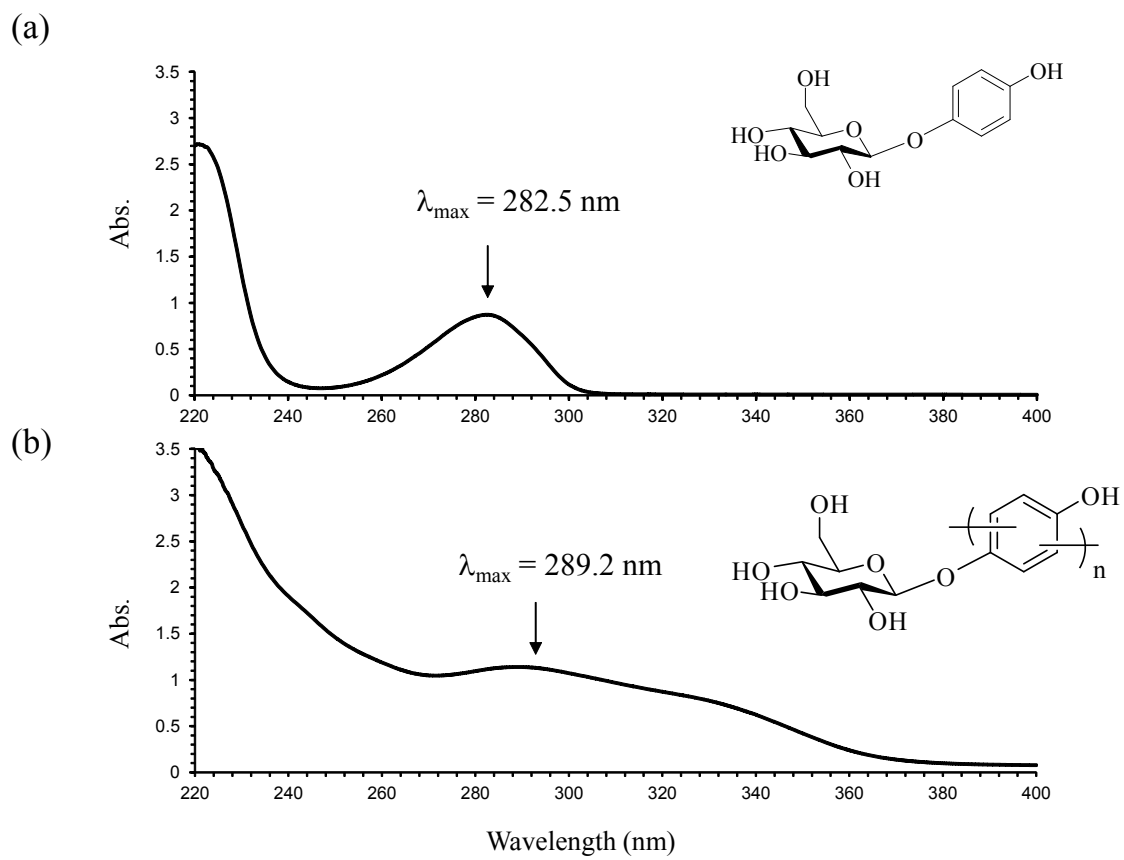
**Figure 1s.** FT-IR (KBr) spectra of (a)Arb, (b)poly(Arb)



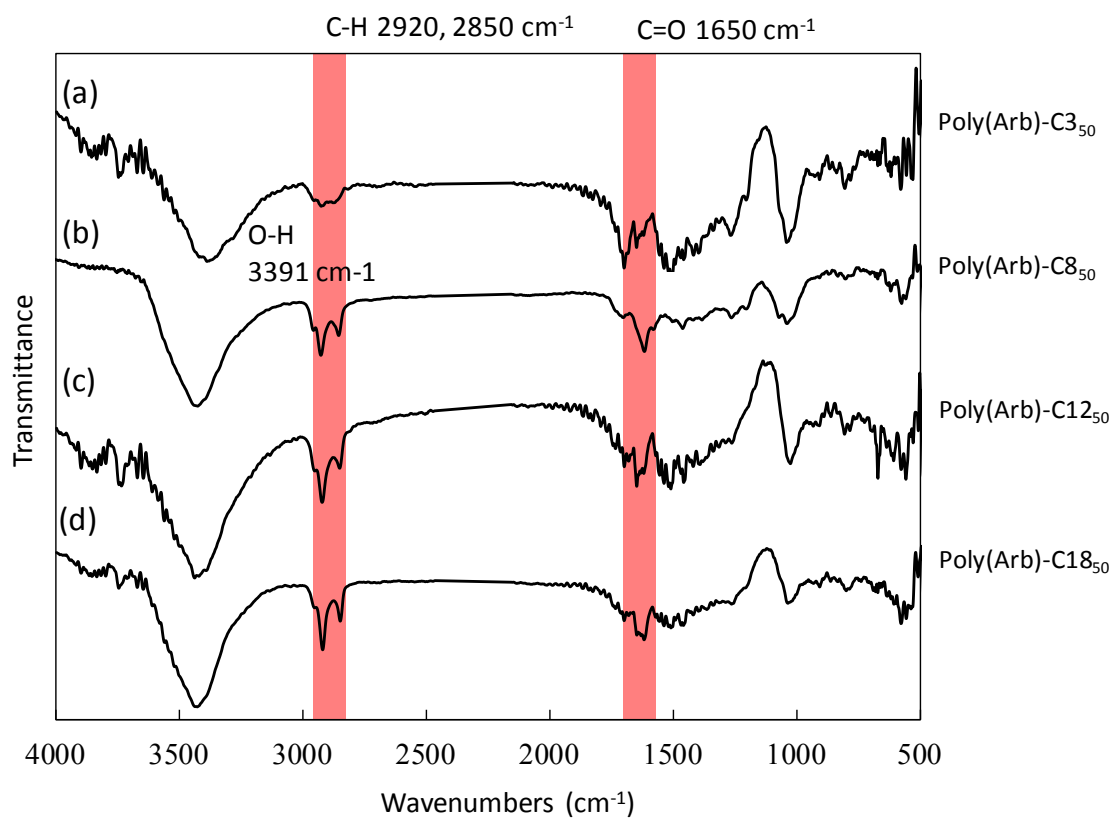
**Figure 2s.** <sup>1</sup>H NMR spectra of (a)Arb, (b)poly(Arb) in D<sub>2</sub>O



**Figure 3s.**  $^{13}\text{C}$  NMR spectra of (a)Arb, (b)poly(Arb) in  $\text{DMSO-}d_6$

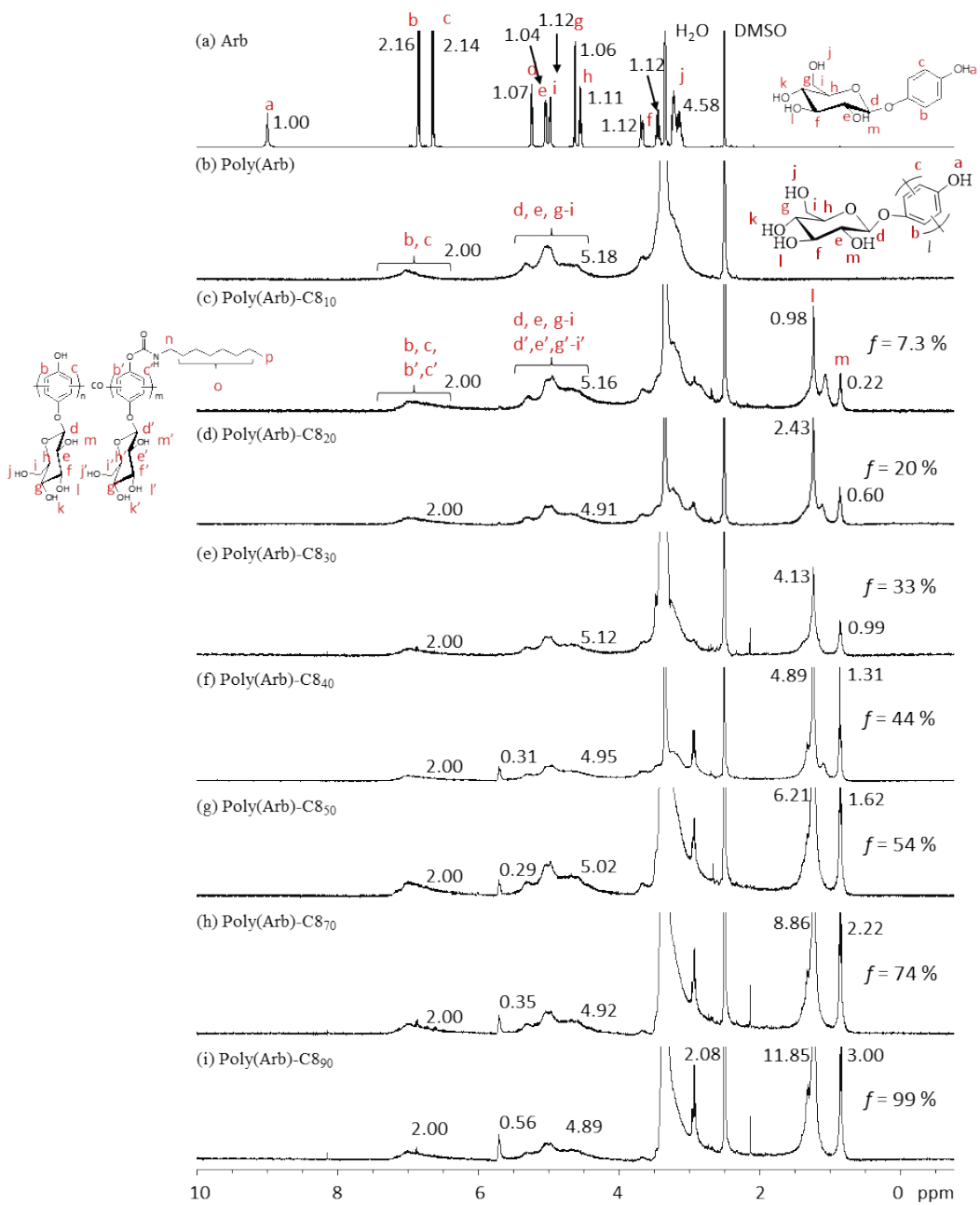


**Figure 4s.** UV-Vis spectra of (a) Arb and (b) poly(Arb) in water

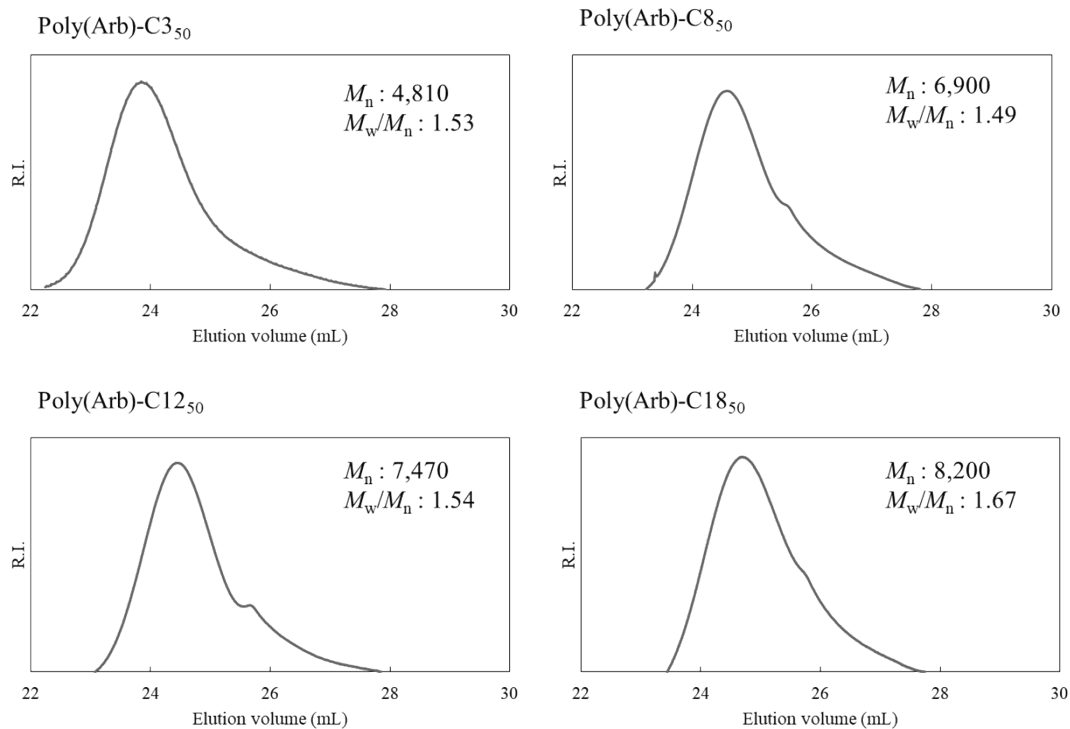


**Figure 5s.** FT-IR (KBr) spectra of (a) poly(Arb)-C3<sub>50</sub>, (b) poly(Arb)-C8<sub>50</sub> (c) poly(Arb)-C12<sub>50</sub> and (d) poly(Arb)-C18<sub>50</sub>

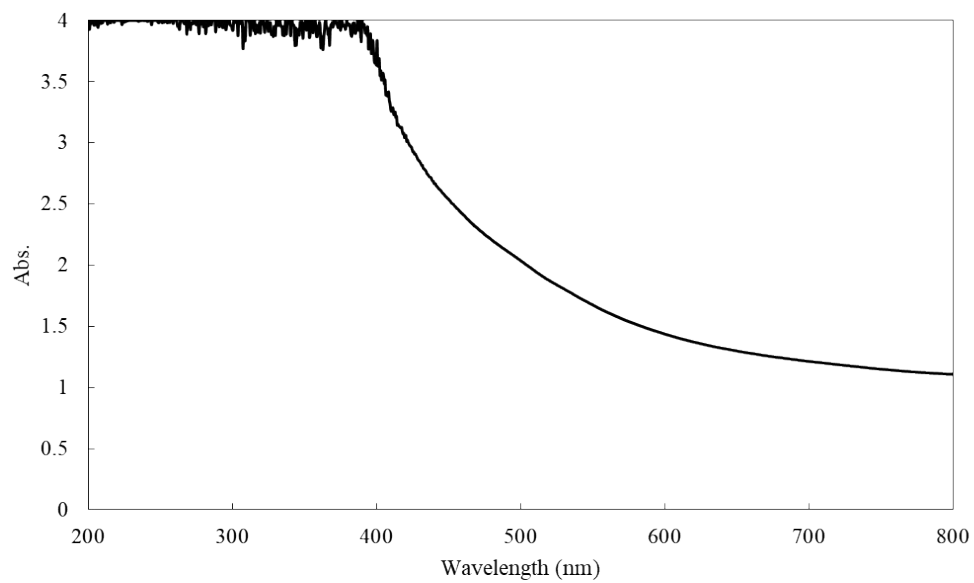




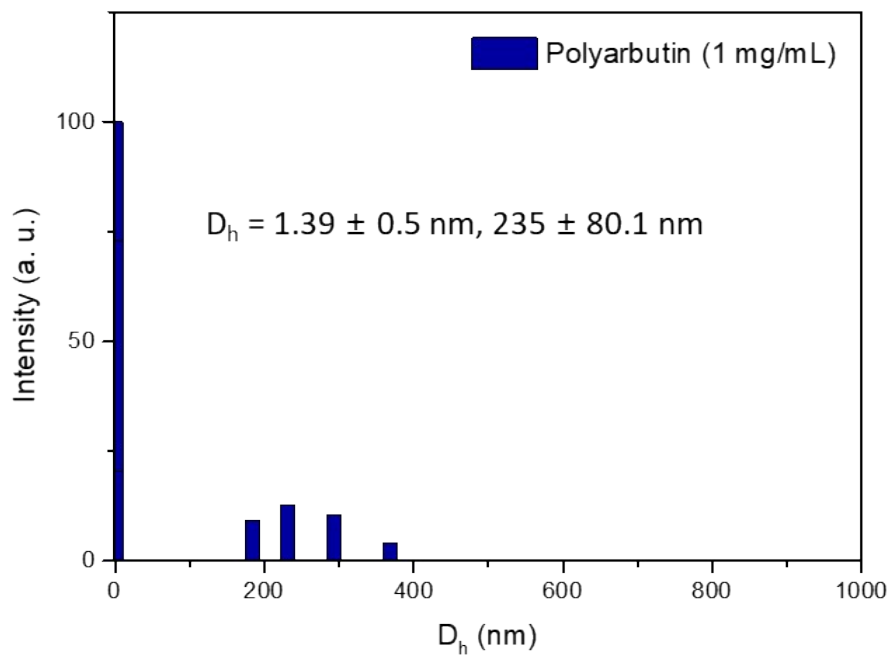
**Figure 6s.**  $^1\text{H}$  NMR spectra of Arb, poly(Arb), and poly(Arb)-C $_x$  in DMSO- $d_6$



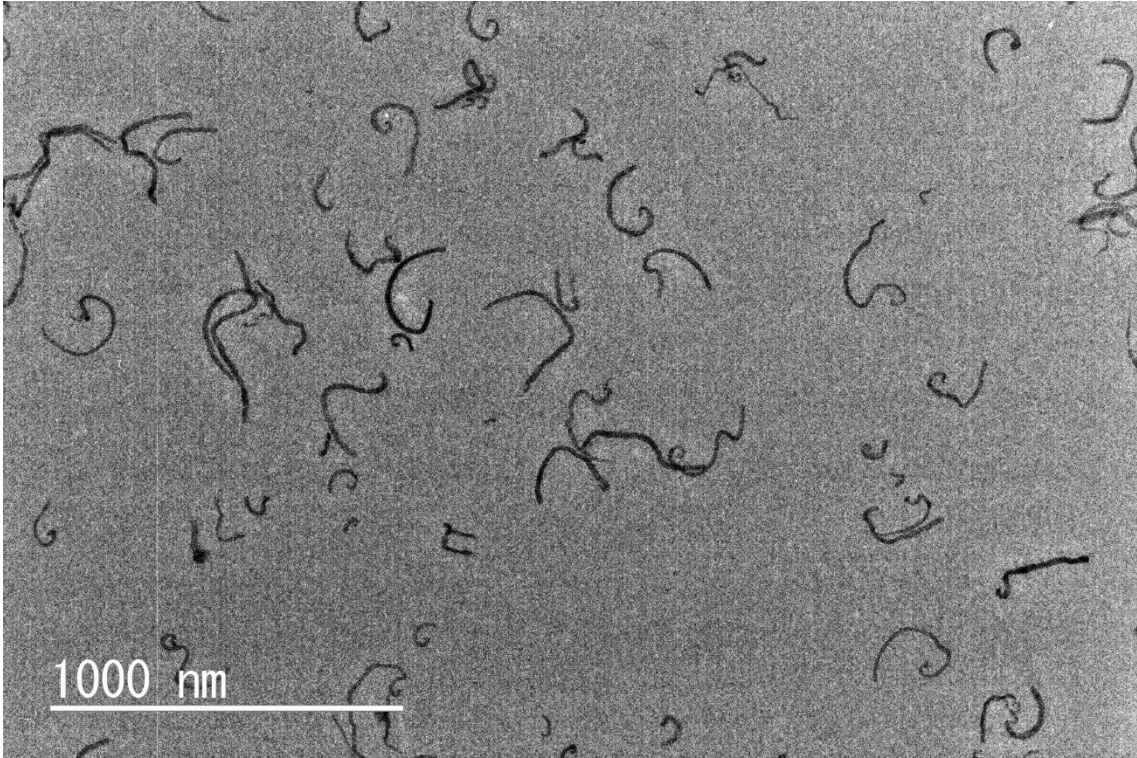
**Figure 7s.** GPC profiles of poly(Arb)-R<sub>50</sub> (NMP, LiBr)



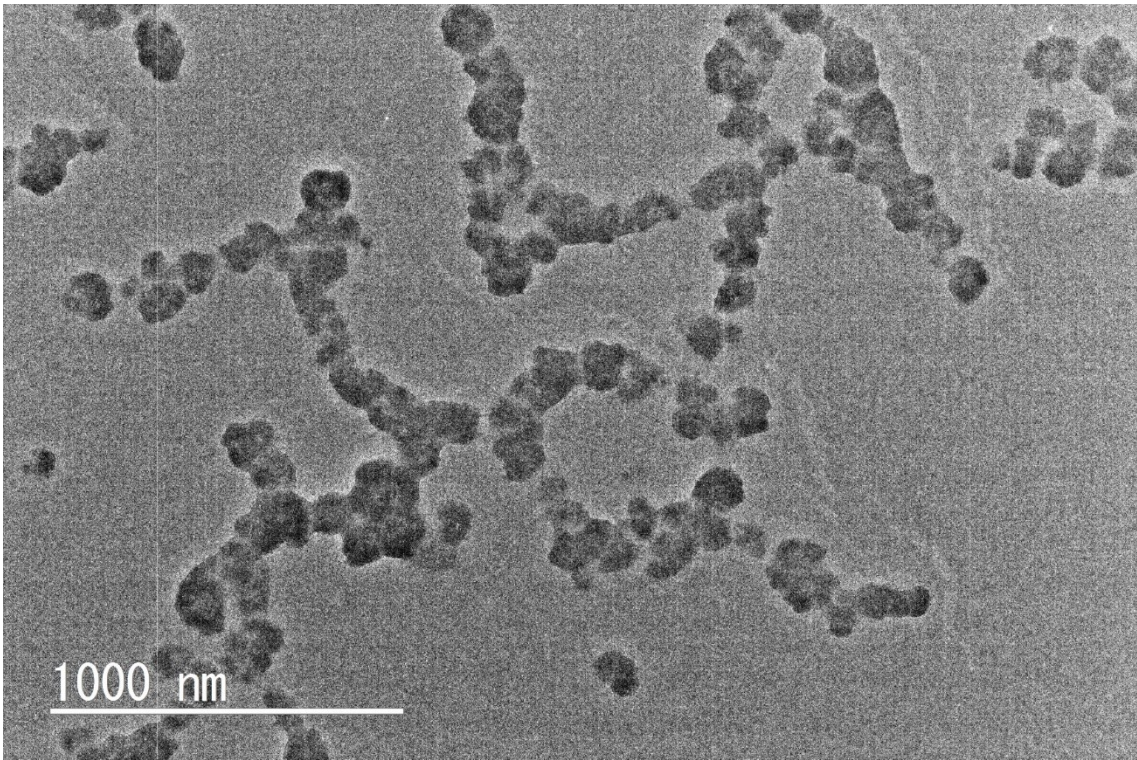
**Figure 8s.** UV-vis spectrum of poly(Arb)-C8<sub>30</sub> (2.0 mg/mL) containing  $\beta$ -carotene (0.5 mg/mL) in water



**Figure 9s.** DLS measurement of poly(Arb) in water (1.0 mg/mL) at 20 °C.

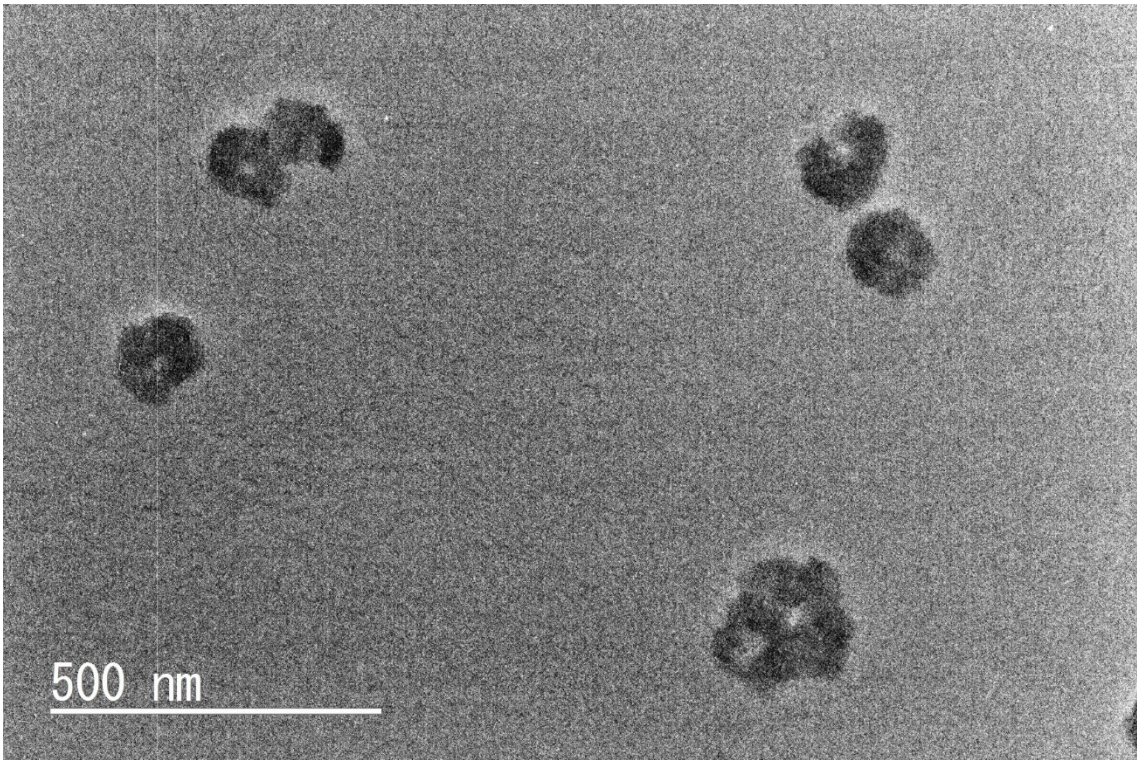


**Figure 10s.** TEM image of poly(Arb)-C<sub>30</sub> micelles

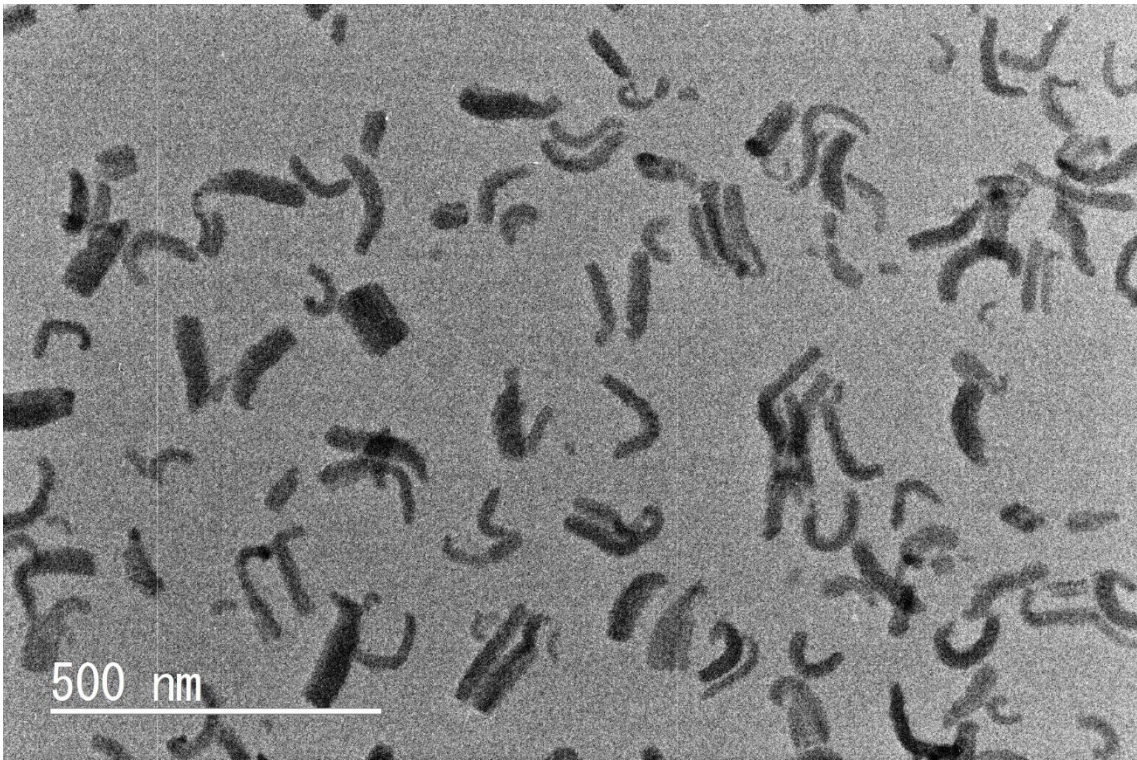


**Figure 11s.** TEM image of poly(Arb)-C<sub>30</sub> micelles



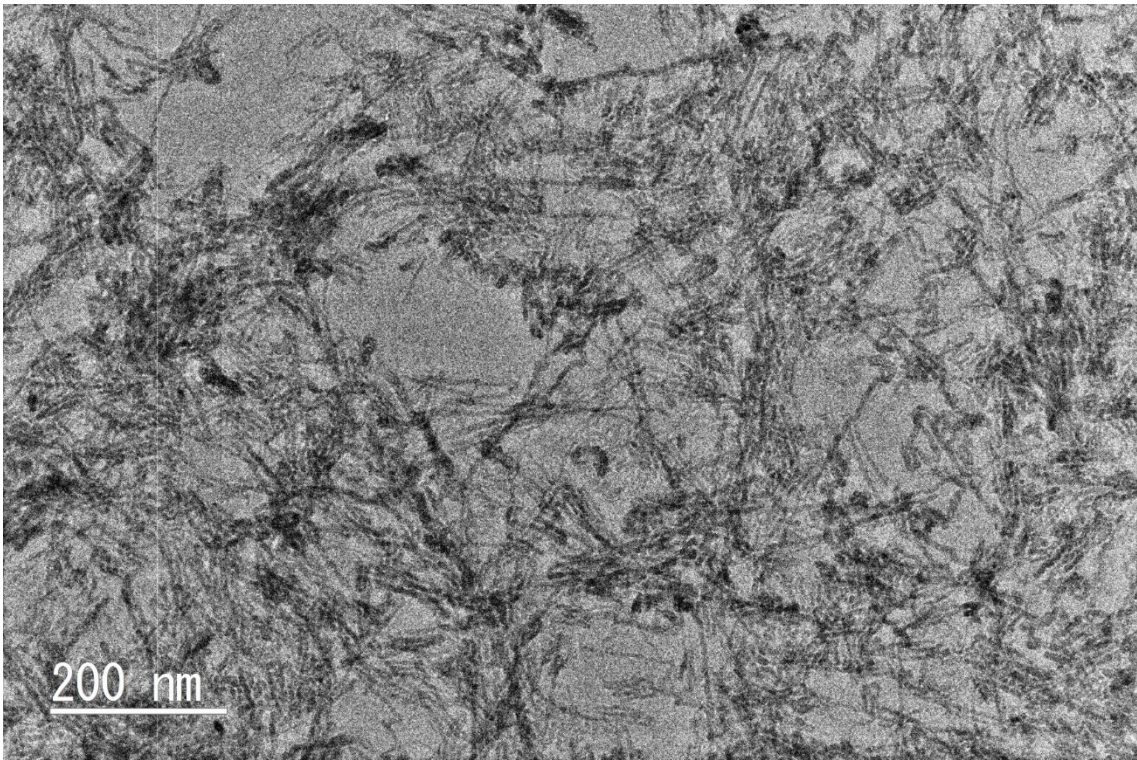


**Figure 12s.** TEM image of poly(Arb)-C<sub>8</sub><sub>10</sub> micelles



**Figure 13s.** TEM image of poly(Arb)-C12<sub>10</sub> micelles





**Figure 14s.** TEM image of poly(Arb)-C<sub>8</sub><sub>10</sub> micelles